

JIMMY DOOLITTLE:
CINNATUS OF THE AIR

BY

BENJAMIN W. BISHOP, Col, USAF

A DISSERTATION PRESENTED TO THE FACULTY OF
THE SCHOOL OF ADVANCED AIR AND SPACE STUDIES
FOR COMPLETION OF GRADUATION REQUIREMENTS

SCHOOL OF ADVANCED AIR AND SPACE STUDIES

AIR UNIVERSITY

MAXWELL AIR FORCE BASE, ALABAMA

JULY 2016

**JIMMY DOOLITTLE:
CINCINNATUS OF THE AIR**

by

Colonel Benjamin W. Bishop, USAF

A dissertation presented to the faculty of Air University in partial
fulfillment of the requirements for the degree of Doctor of Philosophy

Maxwell Air Force Base, Alabama

July 2016

Dr. THOMAS A. HUGHES, Committee Chair

Dr. DAVID C. ARNOLD

Dr. STEPHEN D. CHIABOTTI

Certificate of Approval:
All degree requirement fulfilled.
Degree awarded (____) (Initial ____)

Timothy M. Cullen, Colonel USAF
Commandant and Dean
School of Advanced Air and Space Studies

DISCLAIMER

The conclusions and opinions expressed in this document are those of the author. They do not reflect the official position of the US Government, Department of Defense, the United States Air Force, or Air University. In accordance with Air Force Instruction 51-303, it is not copyrighted, but is the property of the United States government.



ABOUT THE AUTHOR

Colonel Benjamin Bishop is the Commander of the 56th Operations Group at Luke Air Force Base, Arizona. He entered the Air Force as a Distinguished Graduate of the Reserve Officer Training Corps program at Purdue University, where he was awarded a B.S. in Computer and Electrical Engineering. He also holds a Master of Engineering degree in Space Operations from the University of Colorado, Colorado Springs, a Master of Science Degree in Cyber Warfare from the Air Force Institute of Technology, a Master of Philosophy Degree from the School of Advanced Air and Space Studies, and a Master of Science Degree in National Resource Strategy from the Dwight D. Eisenhower School for National Security and Resource Strategy, National Defense University. Colonel Bishop is a command pilot with nearly 2,000 combined fighter hours in the F-15E and F-35A and is a graduate of the United States Air Force Weapons School.



ACKNOWLEDGMENTS

I would like to express my sincere appreciation to many people who assisted me in this research endeavor. First, I thank my thesis advisor, Dr. Harold Winton, whose wise mentorship taught me to appreciate both the science and art of composition. I am most appreciative to Paul Oelkrug, Patrizia Nava, and the helpful staff of the Special Collections Department, McDermott Library at The University of Texas at Dallas for their time and effort. I also want to thank Julie Arrighetti and the attentive staff of the National Defense University Library located at Fort Lesley J. McNair. Next, I thank Dr. Stephen Chiabotti for his inspiration, support, and valuable comments while serving as a reader on this project. I also commend the efforts of Dr. David Arnold who served as my research advisor at National Defense University. His timely feedback and sage advice provided invaluable guidance on my research journey. I am extremely thankful to my committee chairman, Dr. Thomas Hughes, whose thoughtful wisdom and constant encouragement made this dissertation feasible.

Most importantly, I want to convey my deepest appreciation to my wife and children for their love, patience, and prayers during the long hours devoted to writing this dissertation. Their unwavering support and encouragement is what ultimately made this work possible.

ABSTRACT

This study evaluates Jimmy Doolittle's unique influence on the evolution of air power in the United States Air Force. As one of the most well-known airmen of the twentieth century, Doolittle is the subject of a significant number of books and articles. Despite their many virtues, these efforts have failed to explore the implications of Doolittle's unconventional career, which navigated the military, industrial, and academic communities. For instance, historians have largely overlooked the reserve officer's performance as commander of the Eighth Air Force in World War II. Scholarly examinations have also failed to evaluate his role in founding the Air Force Association (AFA) and advocating for an independent Air Force. Finally, far too little attention has been paid to Doolittle's pivotal influence on the establishment of an innovative culture within the Air Force. This study seeks to fill these gaps. It draws upon multiple sources, including archival documents, Doolittle's personal and military records, and the mature body of biographical literature.

In January 1944, prior to his assumption of command of the Eighth Air Force, Doolittle lacked the administrative skills and bureaucratic experience typical of most senior officers. His legendary raid on Tokyo had, however, demonstrated his technical expertise, courage, and strong personal leadership. Examination of Doolittle's command experience reveals that although his technical expertise did not hinder his performance, it was Doolittle's moral qualities that most significantly hastened the demise of the Luftwaffe.

Upon returning from the war, Doolittle's strident air power views garnered national attention but did little to sway entrenched positions and secure an independent Air Force. After a return to civilian industry, however, Doolittle's credibility, fame, and charismatic personality drew thousands of airmen together under the banner of the AFA. Moreover, Doolittle's advocacy for technical innovation prompted the Air Force to establish an independent Air Research and Development Command (ARDC). Doolittle's efforts demonstrated an exceptional understanding of military bureaucracy, academia, and industry. Indeed, his ability to institutionalize a culture of innovation within the Air Force is perhaps Jimmy Doolittle's most enduring and underappreciated legacy.

Behind Jimmy Doolittle's daring and dashing persona was a measure of humility that fostered his growth as a general officer. Moreover, Doolittle's personal charisma combined with his diverse understanding of the military bureaucracy, industrial practices, and academic principles helped establish an enduring culture of innovation within the Air Force. These findings suggest that is in important to nurture leaders of courage, boldness, and humility to serve as commanders at the operational level of war. Furthermore, the conclusions imply a diverse career, which may include experience outside military service, is an appropriate means to foster growth of innovative strategic leaders.



CONTENTS

Chapter	Page
APPROVAL	i
DISCLAIMER	ii
ABOUT THE AUTHOR.....	iii
ACKNOWLEDGMENTS	iv
ABSTRACT	v
INTRODUCTION	1
1 THE SHAPING OF A LEADER	16
2 OPERATIONAL EFFECTIVENESS.....	58
3 TACTICAL AND TECHNICAL INNOVATION.....	91
4 LEADING THE MIGHTY EIGHTH	123
5 TRANSITION TO CIVILIAN LIFE	147
6 THE CIVILIAN ADVOCATE.....	181
7 THE RESEARCH AND DEVELOPMENT ADVOCATE.....	212
8 THE GODFATHER OF AIR FORCE RESEARCH AND DEVELOPMENT	249
CONCLUSION: A SPECTACULARLY UNIQUE INDIVIDUAL.....	395
BIBLIOGRAPHY	309

Introduction

James Harold “Jimmy” Doolittle was among the most influential Airmen of the 20th century. He is the only individual to have been awarded both the Congressional Medal of Honor and the Presidential Medal of Freedom, America’s highest military and civilian honors. His list of accomplishments includes pioneering instrument flight, setting multiple aviation speed records, and leading the daring raid on Tokyo that bears his name. The influence of Doolittle’s career, however, expands well past his remarkable achievements in the air. After leaving active duty in the Army Air Corps, Doolittle became a pioneering innovator at Shell Oil Company.¹ Moreover, following his “thirty seconds over Tokyo,” the reserve officer rose in less than two years from lieutenant colonel to lieutenant general and commanded one of the largest air armadas ever assembled — the Eighth Air Force. After the war, Doolittle became a fierce advocate for the establishment of an independent Air Force and as a civilian, served as the first president of the Air Force Association (AFA). Furthermore, Doolittle’s role as a prominent member of Air Force’s Scientific Advisory Board (SAB) and Special Assistant to the Chief of Staff helped the Air Force become a cornerstone of American defense policy in the Cold War.

Lucius Quinctius Cincinnatus is a prominent figure in Roman history. Over the course of his unique career, the legendary statesman twice ascended to the position of Roman dictator. The accomplished warrior and politician, however, preferred the humble life as a civilian farmer. Hence, after being recalled by the Senate to quell two military crises, once in 458 BC and again in 439 BC, the dictator promptly resigned his position of authority and returned to civilian life.²

¹ Dik Allan Daso, *Doolittle: Aerospace Visionary* (Washington, DC: Brassey’s, Inc., 2003), 112.

² Halicarnassus of Dionysius, “458 BC: Rome: Public servant.” *Lapham’s Quarterly* 4, no. 2 (Spring 2011): 109. Retrieved from EBSCOhost.

Cincinnatus's dedication to service and willingness to relinquish ultimate military power earned him a reputation as a model of Roman leadership and virtue.³

Like Cincinnatus, Doolittle's career is marked by multiple transitions between military service and civilian life. For example, in 1940, Doolittle volunteered to leave a comfortable civilian career to serve his nation in time of crisis. Moreover, similar to Cincinnatus, Doolittle's military achievements earned him a legendary reputation. The celebrated aviator's accomplishments in the military, industry, and academia compelled historian Alex Roland to describe Doolittle as a "personification of...the military-industrial complex."⁴

Yet examinations of Doolittle have largely overlooked his performance as a senior leader and the implications of his "Cincinnatus" career path. Historians, for instance, have not critically assessed the reserve officer's aptitude as a commander following the Tokyo raid. Doolittle is widely considered to have been an "outstanding combat leader" and numbered Air Force commander.⁵ But his glowing reputation had already been established by the time Doolittle took command of the Eighth Air Force. For example, in 1943, in the first of many Doolittle biographies, Carl Mann claimed, "this is the man of simplicity and courage" whose men attest that they "will go any place he wants to lead...any time!"⁶ This feeling was not, however, universal in the Army Air Forces (AAF) at the opening of World War II. Some officers resented the fact he had left the service for a high-paying, civilian

³ Sanford Levinson and Jack M. Balkin, "Constitutional Dictatorship: Its Dangers and Its Design," *Minnesota Law Review*, 94, (13 June 2010): 1791 n9. Retrieved from <http://ssrn.com/abstract=1508666>.

⁴ Alex Roland, *Model Research: The National Advisory Committee for Aeronautics* (Washington, DC: U.S. Government Printing Office, 1985), 284-285.

⁵ Col Phillip S. Meilinger, *Airmen and Air Theory: A Review of the Sources* (Maxwell Air Force Base, AL: Air University Press, 2001), 30.

⁶ Carl Mann, *Lightning in the Sky: The Story of Jimmy Doolittle* (New York: Robert M. McBride & Company, 1943), 256.

position during the interwar period to “feather his nest.”⁷ Others viewed his years as a world-renowned air racer as inadequate preparation for the responsibilities of higher command.⁸ Furthermore, there was a strong impression among his peers that Doolittle’s meteoric rise in rank in World War II was due to a close personal relationship with General Henry “Hap” Arnold. As one of Arnold’s favorites, Doolittle was perceived by some as enjoying special privileges in the service.⁹ Finally, although the raid on Tokyo was a significant accomplishment, it did not necessarily reflect an aptitude to command at the operational level of war.¹⁰ General Dwight Eisenhower only reluctantly accepted him as a subordinate after being pressured by Generals Arnold and George Marshall.¹¹ According to one prominent historian, Eisenhower’s reservations proved justified, because early in the African campaign, Doolittle’s Twelfth Air Force “lacked experience and exhibited an indiscriminate appetite for targets.”¹²

Which of these perceptions of Doolittle as a senior-level commander is more accurate? Have historians perhaps been too kind in their treatment of Doolittle’s command performance? In short, just how effective was Jimmy Doolittle as commander of the Eighth Air Force in World War II?

Likewise, scholars have failed to examine Doolittle’s influence on the Air Force as a reserve officer following the war. The former numbered air force commander obviously possessed strong opinions on the type of

⁷ General James H. Doolittle and Carroll V. Glines, *I Could Never Be So Lucky Again* (New York: Bantam Books, 1992), 150.

⁸ Geoffrey Perret, *Winged Victory: The Army Air Forces in World War II* (New York: Random House, 1993), 181.

⁹ Doolittle and Glines, *I Could Never be so Lucky Again*, 201.

¹⁰ The department of defense defines the operational level of war as: “the level at which campaigns and major operations are planned, conducted, and sustained to achieve strategic objectives within theaters or other operational areas.” Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms*, 8 November 2010 (as amended through 15 February 2016), 176.

¹¹ Doolittle and Glines, *I Could Never be so Lucky Again*, 277.

¹² Douglas Porch, *The Path to Victory: The Mediterranean Theater in World War II* (New York: Farrar, Straus and Giroux, 2004), 399.

Air Force required to secure America's defense in the post-war world. These beliefs, however, have also been largely overlooked. In 2001, Phillip Meilinger observed that, "No one has addressed the issue of Doolittle's beliefs on the proper employment of airpower."¹³ Moreover, Doolittle was a staunch advocate for air power. Yet studies have neglected to examine his effectiveness as an air advocate. How successful was Doolittle in advocating for his air power beliefs?

Additionally, the numerous treatments of Doolittle's life fail to explore his influence on the structure of the Air Force's research and development (R&D) establishment. His extensive autobiography dedicates only a few pages to his role as special assistant to the Air Force Chief of Staff. This unique responsibility, however, indicates General Hoyt Vandenberg's confidence in Doolittle's ability to impart change on the Air Staff. How successful was Doolittle in implementing innovation within the service bureaucracy at a time when nearly every decision in the Air Force was formative?

These questions are relevant because the academic community has largely overlooked Doolittle's leadership performance in World War II and the years that followed. As Richard Davis observed in 1993, "Doolittle badly needs a good biography. The current works on him range in quality from execrable to acceptable."¹⁴ Similarly, Meilinger remarked, "we have yet to see a serious study that looks closely at his career and its effect on American airpower."¹⁵ Likewise, in commenting on Doolittle's career following the war, historian Dik Daso commented, "it is here that his story remains underdeveloped."¹⁶

¹³ Phillip S. Meilinger, *Airmen and Air Theory: a Review of the Sources* (Maxwell Air Force Base, AL: Air University Press, 2001), 29-30.

¹⁴ Richard G. Davis, *Carl A. Spaatz and the Air War in Europe* (Washington, DC: Center for Air Force History, 1993), 688 n9.

¹⁵ Meilinger, *Airmen and Air Theory*, 29.

¹⁶ Daso, Doolittle, xi.

How is it that scholars and biographers have neglected these pivotal roles in air power history? One reason is that Doolittle's other legendary accomplishments, both in and out of uniform, have drawn attention away from his pivotal role in the Combined Bomber Offensive (CBO). Most literature on Doolittle's influence on World War II centers on the daring raid he led on Tokyo. Another reason is that most of the academic review of the American portion of the CBO has concentrated at the tactical and strategic levels of war, thus ignoring Doolittle's important, intermediate command role. Richard Davis and David Mets have both written seminal studies of Doolittle's superior, Carl Spaatz, for instance,¹⁷ and countless narratives illustrate daring accounts of the men who flew bombing missions in the Eighth Air Force.¹⁸ This is not an uncommon occurrence in the historical study of war. As Harold Winton observes in his account of Army commanders in the Battle of the Bulge, "there seems to be a human fascination with military history written at two levels: the very top and the very bottom."¹⁹ Similar rationale has led to overlooking his significant contributions following the war. Doolittle's notable demonstrations of physical courage had passed by 1945. His influence on air power following the war consisted largely of shaping public opinion and engaging in backroom battles against bureaucratic ballast. Although these efforts are not without consequence, marshalling structural change often does not make for riveting prose.

Furthermore, the few studies examining Doolittle's leadership aptitude are limited by a reliance on subjective accounts and a natural

¹⁷ Davis, *Spaatz and the Air War in Europe* and David R Mets, *Master of Airpower: General Carl A. Spaatz* (Navato, CA: Presidio Press, 1997).

¹⁸ Among some of the better accounts are: Donald L. Miller, *Masters of the Air: America's Bomber Boys Who Fought the Air War Against Nazi Germany* (New York: Simon & Schuster, 2007), Bert Stiles, *Serenade to the Big Bird: a New Edition of the Classic B-17 Tribute* (Atglen, PA: Schiffer Publishing, 2007), and Harry H. Crosby, *A Wing and a Prayer: The "Bloody 100th" Bomb Group of the U.S. Eighth Air Force in Action over Europe in World War II* (New York: HarperCollins, 1994).

¹⁹ Harold R. Winton, *Corps Commanders of the Bulge: Six American Generals and Victory in the Ardennes* (Lawrence, KS: University Press of Kansas, 2007), 6.

bias toward this charismatic figure. Lowell Thomas and Edward Jablonski's 1976 biography is based largely on the source these men considered "most reliable, and often most objective," Doolittle himself.²⁰ The general's most prolific biographer, Carroll "CV" Glines, has published numerous accounts of Doolittle's life, including the co-authored memoirs, *I Could Never be so Lucky Again*. Although entertaining and thoughtful, the memoirs, published in 1991, are an account of events penned four decades after they occurred. Hence, Doolittle's autobiography "does not offer a frank appraisal of Doolittle's effectiveness as a combat commander."²¹ Furthermore, the treatment only briefly addresses his involvement in forming the R&D structure of the newly-formed Air Force. Clausewitz himself cautioned against relying upon autobiographies for conducting critical analysis. The Prussian theorist noted that memoirs "treat such matters pretty broadly, or, perhaps deliberately with something less than candor."²²

More recently, Dik Daso's *Doolittle: Aerospace Visionary* is a concise, well-researched treatment but it fails to challenge the conventional wisdom regarding Doolittle's influence found elsewhere in the literature. Jonna Doolittle Hobbes, Doolittle's granddaughter, penned *Doolittle: Master of the Calculated Risk*, an enjoyable book noteworthy for its insight into his personal life, but understandably biased in favor of its subject. Most recently, James M. Scott offered a welcome addition to the body of literature with *Target Tokyo: Jimmy Doolittle and the Raid that Avenged Pearl Harbor*. A finalist for the Pulitzer Prize for History, Scott's impressive work incorporates new source material that offers insight on the raid from the Japanese

²⁰ Lowell Thomas and Edward Jablonski, *Doolittle: A Biography* (Garden City, NY: Doubleday & Company, Inc., 1976), 352.

²¹ Meilinger, *Airmen and Air Theory*, 30.

²² Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret. (Princeton: Princeton University Press, 1989), 164.

perspective. Like other treatments, however, it too fixates on Doolittle's leadership of the daring mission.

In sum, there exists no critical assessment of Jimmy Doolittle's leadership as a citizen-airman between 1944 and 1954. This dissertation seeks to fill that gap.

Doolittle's influence extends well outside the scope of this dissertation. For instance, he lived for nearly 40 years following the span of this study. His diverse responsibilities included chairing the SAB and the National Advisory Committee for Aeronautics (NACA), serving as Chairman of the Board for Space Technology Laboratories, and leading the Executive Committee of the Aerospace Corporation. He also served in many prominent government positions between 1944 and 1954. These include his service as a member of the Joint Congressional Aviation Policy Board, chairing the President's Airport Commission, and an appointment as an advisor to the Committee on National Security Organization.²³ Indeed, a comprehensive account of Doolittle's life warrants significantly more attention than contained in this modest study.

Nevertheless, examining a decade of Doolittle's performance as an Air Force leader beginning in 1944 allows us to evaluate the effectiveness of an officer, in war and peace, who had an unconventional career path. Doolittle's ascent to the rank of lieutenant general, which included time spent in academia and industry, defied the traditional path of officer development. Instead of gaining a professional military education, Doolittle pursued engineering degrees, including a Doctor of Science from the Massachusetts Institute of Technology (MIT).²⁴ Furthermore, Doolittle commanded a numbered air force and advised multiple chiefs of staff with virtually no military staff experience. While his peers were

²³ Doolittle and Glines, *I Could Never be so Lucky Again*, 517-520.

²⁴ Doolittle and Glines, *I Could Never be so Lucky Again*, 518.

gaining valuable experience in the military bureaucracy, Doolittle flew in air races and lived on a comfortable income as an employee of Shell. Thus, by conventional standards, Doolittle was not, in January of 1944, prepared to command the world's largest concentration of airpower. Similarly, in 1951, he was hardly qualified to implement structural changes within the Air Force bureaucracy of behalf of the chief of staff. Or was he? Answering these questions has significant relevance to the preparation of future Air Force leaders.

The first task of this study analyzes Jimmy Doolittle's performance as the commander of Eighth Air Force in World War II. Clausewitz defines critical analysis as the "application of theoretical truths to actual events."²⁵ The present work emulates Clausewitz's guidance with an analytical framework to assess Doolittle's performance. According to Clausewitz, the first step in this process is the discovery and interpretation of evidence regarding the event. These facts are then traced back to causal factors. Finally, the leader must be evaluated according to how well he applied the available means to achieve the desired end.²⁶ To be useful, this evaluation must account for Doolittle's perspective at the time of his command.²⁷ Clausewitz contends that although complete objectivity is unattainable, attempting to reach it imparts necessary humility on the process of criticism.

Clausewitz further argued critical assessment should evaluate a commander's possession of an enigmatic trait referred to as "genius." *On War* submits that this "harmonious combination of elements," is comprised of two components – "intellect and temperament."²⁸ Building on Clausewitz's insights, this study examines Doolittle's intellectual capacity and temperament for air command by evaluating three

²⁵ Clausewitz, *On War*, 156.

²⁶ Clausewitz, *On War*, 156.

²⁷ Clausewitz, *On War*, 164.

²⁸ Clausewitz, *On War*, 100.

categories of performance: operational effectiveness, technical and tactical innovation, and leadership.

One measure of an operational commander's aptitude is the effective application of resources. General Douglas MacArthur famously remarked, "there is no substitute for victory."²⁹ Harry Yarger similarly remarked: "Efficiency is subordinate to effectiveness in strategy."³⁰ These two dicta reflect the imperative for an operational-level commander to achieve his assigned mission. This study uses MacArthur's observation in its assessment of Doolittle's ability to accomplish his assigned missions. This is not to dismiss the importance of efficiency in military operations. The British theorist J.F.C. Fuller valued efficiency and placed it at the epicenter of his military theory. In his treatise *The Foundations of the Science of War*, Fuller argues that all resources used in war should be expended at "the highest profit."³¹ Yarger also acknowledged the value of efficiency stating that, "Good strategy is both effective and efficient."³² In that spirit, this study addresses both operational effectiveness and efficiency with an emphasis on the former.

Innovation is another essential activity of operational-level command. Often considered primarily an intellectual skill, effective innovation requires a moral strength as well. Like many command decisions, innovation involves the risk of making a wrong decision. Innovation also requires eschewing the prevailing wisdom. As Stephen Peter Rosen has observed, "The lack of precedent makes wartime innovation risky, and with the risk often comes a justified aversion."³³

²⁹ Quoted in Richard H. Rovere and Arthur Schlesinger Jr., *General MacArthur and President Truman: The Struggle for Control of American Foreign Policy* (New Brunswick, NJ: Farrar, Straus, and Giroux, 1951) 227.

³⁰ Harry R. Yarger, *Strategy and the National Security Professional: Strategic Thinking and Strategic Formulation in the 21st Century*, (Westport, CN: Praeger Security International, 2008), 153.

³¹ Colonel J.F.C. Fuller, D.S.O., *The Foundations of the Science of War* (London: Hutchinson and Co., 1926), 201.

³² Yarger, *Strategy and the National Security Professional*, 153.

³³ Stephen Peter Rosen, *Winning the Next War: Innovation and the Modern Military* (Ithaca, NY: Cornell University Press, 1991), 25.

This study evaluates Jimmy Doolittle's aptitude as an operational innovator by addressing five issues. First, it identifies specific problems the Eighth Air Force encountered while Doolittle was in command. Next, it explores evidence to discern how Doolittle perceived and defined the problem. Third, it assesses what actions (if any) he took to resolve the problems. Fourth, it evaluates the results of his actions. Finally, it seeks to identify adverse, unintended consequences of his innovations.

Leadership constitutes the final facet examined in Doolittle's wartime command. Lord Moran defined military leadership as "the capacity to frame plans which will succeed and the faculty of persuading others to carry them out in the face of death."³⁴ The first half of Lord Moran's injunction is addressed by the evaluation of Doolittle's operational effectiveness described above. This portion of the study explores Doolittle's persuasiveness. Leadership is often considered the ability to motivate others to accomplish the mission. Obviously, this is an important facet of leadership. Motivation, however, is a skill that affects people's emotional feelings. Persuasion's role in leadership, in contrast, appeals to people's reason. The investigation will assess Doolittle's ability to persuade both his subordinates and his superiors as to the value of his policies. It also assesses the effect these efforts had on Doolittle's relationships with these influential Airman.

The second undertaking of the study evaluates Doolittle's influence as a reserve officer on the evolution of the Air Force following World War II. Again emulating Clausewitz's demand for objectivity, the dissertation examines Doolittle's vision of air power at the conclusion of the war. This understanding offers a benchmark with which to evaluate his success in implementing his air power beliefs. The study also examines the criteria he invoked in deciding to leave active duty at the end of the war. Indeed, eschewing the uniform for a suit enabled Doolittle to lead

³⁴ Lord Moran, *The Anatomy of Courage*, 2nd ed. (London: Constable, 1966), 180.

the AFA as its first president. The study will assess Doolittle's aptitude in marshaling this large organization to advance one of its founding charters – securing independence for air power.

A strategic leader's effectiveness depends on his ability to marshal large, complex organizations to adopt his or her vision. For example, Tony Blair placed the ability to articulate vision subordinate to the skill of navigating bureaucracy. The former Prime Minister argued that plenty of talented orators can accomplish the former; only a true strategic leader can perform the latter and establish enduring policy.³⁵ Similarly, author Richard N. Haass submitted that a leader's success is largely reflected in the ability to implement a decision in a large bureaucracy.³⁶ Not surprisingly, the Harvard Business School includes the bureaucratic elements of structure and staffing in their 7-S model for organizational alignment.³⁷ Accordingly, Rosen stated, "military innovation is necessarily a problem of bureaucratic innovation."³⁸ Indeed, imparting change on a bureaucratic processes is perhaps the most enduring reflection of a leader's strategic influence. Therefore, this study assesses Doolittle's effectiveness in implementing change in the Air Force bureaucracy while both in uniform and out.

The study begins with a historical narrative of Jimmy Doolittle's life leading up to his assumption of command of the Eighth Air Force. This account draws largely upon the mature secondary literature that investigates his life and the raid on Tokyo. Included in this assessment is a review of his leadership experiences before 1944. It also addresses what he missed by not attending the Army's Command and General Staff

³⁵ *Global Public Square*, season 3, episode 32, "Special Report on Leadership" with Fareed Zakaria, aired on 2 January 2011 on CNN.

³⁶ Richard N. Haass, *The Bureaucratic Entrepreneur: How to be Effective in any Unruly Organization* (Washington, DC: Brookings Institution Press, 1999), 40-41.

³⁷ J. Bradach, "Organizational Alignment: The 7-S Model." *Harvard Business School Note*, Reprint 9-497-045 (1996): 3-5.

³⁸ Rosen, *Winning the Next War*, 2.

School, the Army War College, or the Air Corps Tactical School. This chapter answers the question, based on what we know about Doolittle prior to 1944, “What are reasonable expectations of his performance as commander of the Eighth Air Force Europe?”

The second chapter assesses Doolittle’s operational effectiveness. It investigates whether or not Doolittle made the best possible use of the resources allocated to him, given his command environment. It discerns what was similar and different about commanding the Eighth Air Force compared with Doolittle’s previous leadership roles. It addresses several questions regarding his effectiveness at the operational level of war. What was Doolittle’s approach to achieve air superiority over western Europe? What role did Doolittle play in changing the length of bomber crew tours? How did he adjust to the mission of close air support?

Chapter three investigates Doolittle’s tactical and technical innovation in the Combined Bomber Offensive. It does so through several questions. How influential was Doolittle in shaping the tactical employment of the Eighth Air Force? How pivotal was his role in changing the tactical use of escort fighters in early 1944? What was Doolittle’s function in the implementation of technological advances? How well did he blend technical and tactical innovation in his attempt to improve the effectiveness of radar-bombing?

The fourth chapter examines Doolittle’s performance in leading the men and women of the Eighth Air Force. It examines his command environment and his leadership style, and it assesses how he coped with a decline in aircrew morale. Did any decisions regarding the innovative and efficient use of airpower hinder his ability to lead his men? How did his decisions affect his relationships with superiors, peers, and subordinates? How well did he sustain the Eighth’s military spirit?

Chapter five examines Doolittle’s experiences in the closing days of World War II and his subsequent transition to civilian life. How did the

searing experiences of global war affect Doolittle's vision of air power? How did these views manifest themselves in his public advocacy following the war? How effective was Doolittle in shaping the debate in the War Department's favor? Additionally, what factors drove his decision to hang up his uniform for a suit?

Chapter six explores Doolittle's role as a civilian advocate for an independent air force in 1946 and 1947. How did Doolittle balance his concurrent responsibilities as a vice president of Shell Oil, a prominent air advocate, and a reserve officer? Did Doolittle provide Shell financial benefit or was his employment viewed as a patriotic duty? Moreover, what benefit, if any, did the Air Force receive from Doolittle's civilian employment? The chapter also explores Doolittle's role in establishing the AFA. How effective was he in leading the organization? In the aggregate, how influential were his efforts in the campaign for air independence?

The seventh chapter examines Doolittle's role as an advocate for an independent Air Research and Development Command (ARDC) in the United States Air Force. How did Doolittle's personal view on R&D compare with the Air Force and its senior leaders? Was the business executive's opinion valued by the chief of staff? If so, to what extent? In short, how important was Doolittle in the decision to establish ARDC?

Chapter eight evaluates Doolittle's role in implementing structural change within the Air Force between 1950 and 1954. Why did many within and without the Air Force oppose the decision to establish ARDC? How effective was Doolittle in implementing change within the Air Force bureaucracy? What are the lasting implications of Doolittle's influence in the evolution of R&D in the Air Force?

Finally, this investigation synthesizes the answers to the above questions, drawing appropriate conclusions regarding Jimmy Doolittle's effectiveness as a leader in war and peace, and discussing the

implications of these findings for contemporary and future Air Force leaders.

This dissertation builds upon previous studies the author has conducted on the life and career of Jimmy Doolittle. Included in these works is his published thesis titled *Jimmy Doolittle: The Commander Behind the legend*, which has been published by Air University Press. The dissertation also draws heavily upon two papers titled “Jimmy Doolittle: The Post War Aviation Innovator” and “The Structure of Innovation.” These studies were written while the author was a student at the The Eisenhower School for National Security and Resource Strategy, National Defense University.

The evidence for this study comes from numerous sources. The resources at the Air Force Historical Research Agency (AFHRA) provide intimate insight into the operations of the Eighth Air Force. These documents provide an account of World War II events from the perspective of 1944. Archived histories of the Deputy Chief of Staff for Development (DCS/D) and the Air Materiel Command (AMC) also offer insight into the perspective of various Air Force staff agencies in the early 1950s. Likewise, the AFHRA houses many of Doolittle’s recorded oral histories, which offer insight into Doolittle’s perception of events. The earliest of these interviews, however, dates back only to 1968, significantly removed from the events themselves. This disadvantage is offset by the large collection of correspondence housed in his personal papers, which reside in the Doolittle Library at the University of Texas at Dallas. The Library of Congress also holds manuscript collections and official documents giving insight to the perspectives of Doolittle’s supervisors and peers, including the personal papers of Generals Arnold and Spaatz. These resources provide officer assessment reports, correspondence, interviews, and personnel records. The National Personnel Records Center at St. Louis house Doolittle’s service records,

which provide insights into his military career. Finally, the official records of the Special Assistant to the Chief of Staff reside at the National Archives located in College Park, Maryland. This extensive collection of correspondence provides an unvarnished perspective into the bureaucratic dealings that accompanied the establishment of the Air Force Research and Development Command (ARDC).

Clausewitz wisely asserts, “If a critic wishes to distribute praise or blame, he must put himself exactly in the position of the commander.”³⁹ Hence, in order to assess his influence, we must attempt to get inside the mind of Jimmy Doolittle. This requires us to look back at Doolittle’s life prior to arriving in England in January 1944.



³⁹ Clausewitz, *On War*, 164.

Chapter 1

The Shaping of a Leader

Examining Jimmy Doolittle's life leading up to his command of the Eighth Air Force provides a reasonable expectation of his performance as a senior leader. How did his childhood and early career in the armed forces influence his performance as a junior officer? Likewise, how did his formative years as an employee of Shell Oil affect his perception of innovation and the relationship between government and industry? How did Doolittle perform as a general officer before taking command of the Eighth Air Force? Finally, based on these studies, what is a reasonable expectation of Doolittle's performance as commander of the Mighty Eighth?

Early Life and Career

James Harold Doolittle was born on December 14, 1896 near San Francisco, California. He was the only child of Rosa Shepard, a stern disciplinarian, and Frank Henry Doolittle, a carpenter described by his son as a "loner in spirit."¹ Shortly after Doolittle's birth his father left for the Alaskan frontier. Rosa and her son joined Frank two years later, and the boy spent his formative years growing up in the isolated mining town of Nome, Alaska. Under the tutelage of his father, Jimmy acquired a skill for carpentry and design.² Frank also sparked a yearning for travel and exploration by taking the eleven-year-old boy on a trip to California. Doolittle later recalled that the trip to the "outside" changed his perspective "right then and there."³

¹ Dik Alan Daso, *Doolittle: Aerospace Visionary* (Washington, DC: Brassey's, Inc., 2003), 3. General James H. Doolittle and Carroll V. Glines, *I Could Never Be So Lucky Again* (New York: Bantam Books, 1992), 22.

² General Jimmy Doolittle, Interview by Dr. Edgar F. Puryear, Jr., 7 February 1977, USAF Oral History Collection, AFHRC call no. K239.0512-1405. Tape 1, Side 1, 7.

³ General James H. Doolittle and Carroll V. Glines, *I Could Never Be So Lucky Again* (New York: Bantam Books, 1992), 22-23.

Nome's frontier environment fostered a competitive spirit that Doolittle carried throughout his life.⁴ Smaller than his peers, Doolittle battled bullying with an aggressive onslaught of punches. He gained a reputation as a daring brawler by besting older and bigger boys.⁵ Doolittle also excelled in gymnastics. He spent hours practicing aerial stunts and developed a keen sense of balance and coordination.⁶ Doolittle continued his athletic talents after Rosa moved her son back to California in 1908 without Frank. Doolittle won the Amateur Boxing Championship of the Pacific Coast in 1912 and earned money by entering professional tournaments.⁷ He later competed as a member of the University of California School of Mines boxing team and gymnastics club.⁸

In California, the rough boxer met a refined woman who changed his life – Josephine Daniels. In stark contrast to Jimmy, “Joe” grew up in a cultured family from Louisiana and was a top student. Not surprisingly, Doolittle's rough reputation did not please Joe's family. Undeterred, he used his earnings from professional boxing to court her. His persistence paid off, and they were married on Christmas Eve, 1917. Throughout their 71-year marriage, Joe's measured, disciplined, and friendly demeanor grounded Doolittle's desire for independence and adventure.⁹ His love for Joe inspired Doolittle to seek stability in his life and obtain the means to support his new bride.

⁴ Doolittle later commented that he believed that respect and a reputation for winning was an essential part of effective leadership. Doolittle, Interview by Puryear, 1977, Tape 1 Side 1, 2-3.

⁵ Doolittle and Glines, *I Could Never be so Lucky Again*, 20.

⁶ Doolittle and Glines, *I Could Never be so Lucky Again*, 21.

⁷ Questions for the Examination of Applicants, Aviation Section, Single Officers Reserve Corps. 2 October 1917, Official Military Personal File of James H. Doolittle, National Archives and Records Administration, 01 Service Documents.pdf, 7.

⁸ Questions for the Examination of Applicants, Aviation Section, Single Officers Reserve Corps, 2 October 1917, Doolittle Military Personal File, National Archives, 01 Service Documents.pdf 6.

⁹ Joe Doolittle died on 24 December 1988, the couple's 71st wedding anniversary. Doolittle and Glines, *I Could Never be so Lucky Again*, 37-38.

Following a failed venture to Alaska in search of employment with his father, Doolittle enrolled in a junior college and later transferred to the University of California. After completing three years toward a degree in mining engineering, the gravity of World War I drew Doolittle to the Army recruiter's office. He enlisted in the aviation branch because working with "mechanical things" appealed to him more than "the idea of going into the trenches."¹⁰

Doolittle entered the Army as a "flying cadet" and began pilot training at Rockwell Field on San Diego's North Island.¹¹ He graduated from flight school on March 5, 1918 and received his commission as a second lieutenant in the Signal Reserve, Aviation Section. After advanced flight instruction at Gerstner Field, Louisiana, he returned to California to serve as a combat and gunnery instructor at Ream Field, an auxiliary airport south of Rockwell.¹² Doolittle petitioned his commander for a transfer to the contested skies of France. But his pleas were denied, and he served the rest of World War I training other pilots for combat.

Doolittle excelled as a young fighter pilot. His superior balance, gained as a tumbler, and quick reflexes developed from boxing, provided him an advantage in aerial combat.¹³ His competitive spirit enhanced these skills. Aware that inept flying would undermine his credibility, he practiced tirelessly. He later reflected that he "perfected my flying skills" during this period.¹⁴ His reputation as a capable pilot quickly spread and made an impression on two fellow lieutenants who figured significantly in Doolittle's later career – Ira Eaker and Carl "Tooey" Spaatz.¹⁵

¹⁰ Doolittle, Interview by Puryear, 1977, Tape 1 Side 1, 9.

¹¹ Doolittle and Glines, *I Could Never be so Lucky Again*, 37-38.

¹² Doolittle and Glines, *I Could Never be so Lucky Again*, 40-41.

¹³ Doolittle, Interview by Puryear, 1977, Tape 1 Side 1, 10.

¹⁴ Doolittle and Glines, *I Could Never be so Lucky Again*, 42.

¹⁵ Doolittle and Glines, *I Could Never be so Lucky Again*, 55.

Doolittle, however, did not limit his quest for aerial credibility to the cockpit. Given his small stature and experience as a gymnast, he gradually experimented with wing-walking. Slow, tentative step by slow, tentative step, Doolittle acquired the ability to cling to the aircraft wings during flight. He reasoned it would be a simple task to progress from riding on the aircraft wing to the axle. Consequently, he bet a fellow instructor that he could ride between the aircraft wheels during a landing.¹⁶ Doolittle's bet paid off in the form of five dollars and increased respect from his peers. His supervisors, however, did not condone Doolittle's daring exploits. The stunt garnered the attention of the new District Supervisor, Colonel Henry "Hap" Arnold.¹⁷ Despite these aerial antics, Arnold recognized the younger man's talent as an aviator and rated him as "an exceptionally fine instructor and pilot" with "good judgment with quick thinking."¹⁸

In July 1919, the Army Signal Corps assigned Doolittle to Kelly Field near San Antonio, Texas, where he was promptly confined to post for "stunting" a DH-4.¹⁹ His time at Kelly, however, was brief; in October he joined Flight A of the 90th Aero squadron at Eagle Pass on the Rio Grande.²⁰ The "Dicemen" had the tedious task of patrolling the Mexican border. Doolittle introduced some excitement into the missions by flying between two narrowly spaced pylons supporting the Pecos River High Bridge.²¹ Although Doolittle carefully surveyed the bridge prior to the stunt, once again, a commander did not approve of his daring spirit. Accordingly, his efficiency report reflected the performance of an above-

¹⁶ Doolittle and Glines, *I Could Never be so Lucky Again*, 47.

¹⁷ General H. H. Arnold, *Global Mission* (New York: Hutchinson & CO., 1951), 75-76.

¹⁸ Special Efficiency Report for Emergency Officers, 28 April 1920. Period covered 13 March 1919 – 30 May 1919. Doolittle Military Personal File, National Archives, 08 Efficiency Records.pdf, 4.

¹⁹ Daso, *Doolittle*, 2.

²⁰ Although not noted in his autobiography, according to official Air Force records, the 90th Aero Squadron was stationed at Sanderson, Texas from 29 Nov 1919. Flight A operated from Eagle Pass. <http://www.afhra.af.mil/factsheets/factsheet.asp?id=10541>.

²¹ Doolittle and Glines, *I Could Never be so Lucky Again*, 57.

average pilot with “one serious drawback,” an “inclination to occasionally use poor judgment; i.e. take exceptional and unnecessary risks in flying.”²²

In 1922 Doolittle focused his penchant for daring aerial endeavors onto an effort that advanced the aviation community. He obtained Chief of the Air Service, General Mason M. Patrick’s, approval to attempt a cross-country flight in less than twenty-four hours. As with many of his earlier “stunts,” Doolittle planned the mission methodically. First he developed technical modifications to enhance the range of his DH-4 aircraft. As a recent graduate of the Air Service Mechanics School, Doolittle understood the complex workings of aircraft engines and systems. He applied this knowledge during a visit to the Air Service’s test facility at McCook Field, Dayton, Ohio. There, he consulted engineers for advice on his proposed modifications. Returning from Dayton, he presented the ground crew at Kelly his plans to modify his DH-4B’s front seat with an additional 240-gallon fuel tank and a 24-gallon oil tank. To accommodate the new fuel configurations, a slight camber was added to the upper wing; and the bottom of the aircraft was streamlined. Doolittle also installed a lifting body on the landing gear to reduce drag. Other modifications included additional support ribs, tighter stitching, a customized coating, and varnish to strengthen the wings.²³ Doolittle also acquired a new flight instrument being tested at McCook – a turn-and-bank indicator. Finally, he designed the first “pilot dehydration” tube to accommodate his personal needs for the long flights.²⁴ Based on engine data from test flights, Doolittle calculated he could fly safely for thirteen hours without landing for fuel.

²² Efficiency report dated 20 Jan 1920, Doolittle Military Personal File, National Archives, 08 Efficiency Records.pdf, 2.

²³ Daso, *Doolittle*, 13.

²⁴ Doolittle and Glines, *I Could Never be so Lucky Again*, 67.

Doolittle also prepared himself for the mission by training vigorously for the flight. He practiced flying from Kelly Field to both San Diego and Florida to familiarize himself with the route.²⁵ During these flights, he documented in his notebook terrain details and aircraft performance. Doolittle considered pilot fatigue to be his biggest obstacle. Consequently, he planned his flight from east-to-west into prevailing winds because the westerly route offered him three additional hours of daylight. Doolittle also arranged for a plane from Rockwell Field to escort him into California. The accompanying aircraft would help him remain alert during the last hours of the mission. Finally, he prepared himself physically with regular exercise and “abstinence from all injurious habits.”²⁶

By August 6, 1922, Doolittle’s extensive technical, physical, and mental preparation had given him “implicit confidence” in his ability to fly coast-to-coast in under twenty-four hours.²⁷ However, an error of “over confidence” delayed his mission for nearly a month.²⁸ His preparation failed to account for the hazards of taking off from Pablo Beach, Florida, at night. At 9:40 p.m. EST, as a crowd watched, Doolittle’s DH-4 veered towards the rising tide, and a wave caught the wheels causing the aircraft to crash. He emerged from the wrecked aircraft unharmed but humbled.²⁹

With the blessing for a second attempt granted by General Patrick, a determined Doolittle refurbished the aircraft. On September 4, 1922 at 9:52 p.m. EST, with lanterns to guide the takeoff roll, he safely departed from Pablo Beach.³⁰ After an “uneventful flight” of ten hours and five

²⁵ Doolittle and Glines, *I Could Never be so Lucky Again*, 66.

²⁶ James H. Doolittle, “Report of Cross Country Flight to Chief of Air Service”, 19 September 1922, Doolittle Military Personal File, National Archives, 01 Service Documents.pdf, 92.

²⁷ Doolittle, “Report of Cross Country Flight”, 93.

²⁸ Doolittle, “Report of Cross Country Flight”, 94

²⁹ When Doolittle asked if was injured in the crash he responded “no but my feelings are.” Doolittle and Glines, *I Could Never be so Lucky Again*, 68.

³⁰ Doolittle, “Report of Cross Country Flight”, 94.

minutes, Doolittle landed at Kelly Field at 6:57 a.m. CST.³¹ After fueling, maintenance work, and a large breakfast, Doolittle climbed into the airplane and departed at 8:07 a.m. CST for the second leg of his flight.³² He joined with two Rockwell-based aircraft over Yuma, and they followed him in for a formation landing at Rockwell Field, California. The entire trip covered 2,163 miles with an elapsed time of 22 hours, 30 minutes.³³

Doolittle's daring cross-country flight had a profound effect on both aviation and his career. First, as Doolittle concluded in his official report, the flight demonstrated the feasibility of conducting long-range flights.³⁴ He noted that both the Liberty engines and a pilot in "good physical condition," could endure the demands of a long-duration flight.³⁵ Doolittle's successful flight also demonstrated the attributes of thorough, innovative planning and solid physical endurance. His accomplishment garnered praise from his superiors and peers alike. He was later awarded a Distinguished Flying Cross for the achievement.³⁶ The experience he gained from planning this feat would serve him well later when he led a mission that would change the landscape of World War II.

Doolittle's next assignment brought him to McCook Field in Dayton, Ohio, and the Air School of Applications to attend a one-year course in engineering.³⁷ His transcontinental flight caused him to miss the first week of class, but he quickly caught up and mastered the essentials of aeronautical engineering.³⁸ He learned new methods with which to reduce aerodynamic drag, increase engine efficiency, and

³¹ Doolittle, "Report of Cross Country Flight", 94.

³² Doolittle, "Report of Cross Country Flight", 94.

³³ Doolittle and Glines, *I Could Never be so Lucky Again*, 68-71.

³⁴ Doolittle, "Report of Cross Country Flight", 94.

³⁵ Doolittle, "Report of Cross Country Flight", 94.

³⁶ Daso, *Doolittle*, 16.

³⁷ The Air School of Applications would later become the Air Force Institute of Technology, which still resides at Wright-Patterson Air Force Base in Dayton, Ohio.

³⁸ Doolittle, "Report of Cross Country Flight", 92.

enhance airborne equipment.³⁹ The course encouraged Doolittle to test his knowledge on a fleet of modern test aircraft. McCook Field was flying heaven. During his tenure there, Doolittle added nine different types of aircraft to his flying experience.⁴⁰ His superiors recognized Doolittle's competence as a test pilot and rated him as "one of the four best students" in the school.⁴¹

Doolittle's achievements at McCook Field provided him the opportunity to continue his technical education at The Massachusetts Institute of Technology (MIT). MIT accepted Doolittle into its engineering program after the University of California granted him a Bachelor of Arts degree for his three years of undergraduate studies and subsequent coursework at McCook.⁴² The Army granted him two years of detached service from McCook to pursue his studies. Doolittle moved to Cambridge, Massachusetts, and enrolled at MIT in the fall of 1923. To maintain his flying currency, he periodically returned to Dayton.⁴³

At MIT Doolittle investigated a problem that plagued aircraft in the mid-1920s – structural failure. His master's thesis titled "Wing Loads as Determined by the Accelerometer" and the subsequent paper he submitted to the National Advisory Committee for Aeronautics (NACA), labeled *Report No. 203 Accelerations in Flight*, advanced the understanding of structural effects of in-flight acceleration, also known as "g-loading." Doolittle derived an equation to determine the maximum theoretical load an aircraft could achieve in flight. To test his hypothesis, he flew a Fokker Pursuit PW7 biplane through a series of maneuvers and

³⁹ Doolittle and Glines, *I Could Never be so Lucky Again*, 80.

⁴⁰ Doolittle and Glines, *I Could Never be so Lucky Again*, 75.

⁴¹ A.H. Hobley, Memorandum Request for Assignment, 3 May 1923, Doolittle Military Personal File, National Archives, 01 Service Documents.pdf, 101.

⁴² Copy of Diploma, 22 December 1922, Doolittle Military Personal File, National Archives, 01 Service Documents.pdf 100

⁴³ Doolittle and Glines, *I Could Never be so Lucky Again*, 81.

collected data with a new instrument called an accelerometer.⁴⁴ His tests were cut short, however, when he discovered stress fractures in the wings, which he had nearly ripped off the airplane. Nevertheless, he had collected sufficient data to confirm his predictions.⁴⁵ Based on these results, he concluded that pursuit aircraft could exceed 12gs in a dive recovery. Because aircraft were designed to withstand only 8.5gs, Doolittle commented, “it is obvious that any of the modern pursuit planes can be failed in a vertical dive if the stick is pulled back rapidly enough and the elevators are effective.”⁴⁶ Consequently, he recommended a new design standard of 12gs be adopted to increase safety in pursuit aircraft. He also documented the physiological influence of acceleration forces. Doolittle discovered pilots could tolerate high g-loads for short periods of time. He rightly observed, however, that, “accelerations of the order of 4.5 g., continued for any length of time, result in a complete loss of faculties.”⁴⁷ The Air Corps recognized that his tests obtained “scientific data of great and permanent importance” and awarded Doolittle a second Distinguished Flying Cross in 1929.⁴⁸ MIT also approved his work and presented Doolittle a Master of Science degree in 1924, a year ahead of schedule.

Doolittle used his remaining year at MIT to pursue doctoral studies. His dissertation, titled “The Effect of the Wind Velocity Gradient on Airplane Performance,” investigated the effects of wind on flight characteristics. Many experienced pilots claimed it was easier to fly into the wind than away. Other experienced pilots, disagreed, claiming there

⁴⁴ James H. Doolittle, “Wing Loads as Determined by the Accelerometer” (Masters thesis, Massachusetts Institute of Technology, 1924), 4.

⁴⁵ Doolittle recorded accelerations that were within 3.5% of his calculations. Doolittle, “Wing Loads as Determined by the Accelerometer,” 22.

⁴⁶ Doolittle, “Wing Loads as Determined by the Accelerometer,” 22.

⁴⁷ J. H. Doolittle, *NACA Report No. 203 Accelerations in Flight*, (National Advisory Committee for Aeronautics, 1925), 388. Retrieved from <http://naca.central.cranfield.ac.uk/reports/1925/naca-report-203.pdf>.

⁴⁸ Doolittle and Glines, *I Could Never be so Lucky Again*, 86.

was no difference.⁴⁹ To address this divergence, Doolittle conducted 292 flights in four types of aircraft. He concluded that “theory and experiment indicate that neither wind velocity nor wind velocity gradient exert an influence on airplane performance in straight level flight.”⁵⁰ In other words, the latter opinion was correct. After one rejection for modifications, his committee accepted his dissertation. Consequently, in June 1925, MIT awarded Doolittle one of the first doctor of science degrees in aeronautical sciences.

After Doolittle returned to McCook Field, he was selected to compete in the 1925 Schneider Cup seaplane race.⁵¹ The Air Service provided Doolittle with an R3C, equipped with the most advanced technology of the time, including a 610-horsepower Curtiss V-1400 engine. During the race, Doolittle employed the innovative technique of climbing during straightaways and using steep, descending turns around the pylons. He used the method to win the race and set a new seaplane record with an average speed of 232.573 miles per hour.⁵² He was not, however, satisfied that he had extracted the maximum performance from the R3C. Therefore, after making some technical modifications, he flew the course again the following day and broke his own record with an average speed of 245.713 miles per hour.⁵³

Winning the Schneider Cup enhanced Doolittle’s reputation as a capable and daring aviator. General Mason Patrick dispatched a letter of commendation lauding the race as “one of the most able demonstrations I have ever witnessed.”⁵⁴ A *New York Times* editorial commented on the

⁴⁹ Doolittle and Glines, *I Could Never be so Lucky Again*, 88.

⁵⁰ Doolittle and Glines, *I Could Never be so Lucky Again*, 89.

⁵¹ Daso, *Doolittle*, 19.

⁵² Don Vorderman, *The Great Air Races* (New York: Bantam Books, 1991), 95 and Doolittle and Glines, *I Could Never be so Lucky Again*, 99.

⁵³ Vorderman, *The Great Air Races*, 95 and Doolittle and Glines, *I Could Never be so Lucky Again*, 100.

⁵⁴ Mason M. Patrick to James H. Doolittle, letter, 6 November 1925, Doolittle Military Personal File, National Archives, 07 Awards, Decorations, and Commendations.pdf, 4.

irony of an Army pilot beating two naval aviators in a seaplane race.⁵⁵ Billy Mitchell believed that the media coverage of Doolittle's success at the Schneider Cup overshadowed his own court-martial proceedings; Jimmy Doolittle was becoming a household name.⁵⁶ C. M. Keyes, president of Curtis-Wright Aircraft Company, recognized that Doolittle's growing international fame made him an ideal salesman for the new Curtiss P-1 Hawk pursuit plane. Keyes convinced the Air Service to release Doolittle from service to demonstrate the capabilities of the P-1 in South America. Thus, in the spring of 1926 Doolittle boarded a ship for Santiago, Chile.⁵⁷

Doolittle arrived in Chile on May 23, 1926 and engaged in pre-flight festivities at the officer's club of El Bosque, the military airport near Santiago.⁵⁸ Emboldened by a "delightful, powerful drink called a pisco sour," he attempted to "make character" with his Chilean colleagues by demonstrating a feat of gymnastic prowess on a window ledge.⁵⁹ The ledge gave way; and he fell two stories, breaking both ankles. Dreading the reception he would receive from his colleagues at McCook and his corporate sponsors at Curtis, Doolittle considered his options. "Embarrassment overcame pain," and he convinced the doctors to cut his casts to below the knees so he could control the aircraft's rudder pedals with a set of newly fashioned bootstraps.⁶⁰ Doggedly determined, Doolittle was carried to the aircraft and flew aerial demonstrations in Chile, Bolivia, and Argentina. The flights accomplished their intended effect, and Curtis sold several Hawks in South America.⁶¹

⁵⁵ "Another Army Triumph," *New York Times*, 28 October 1925. Retrieved from ProQuest.

⁵⁶ Arnold, *Global Mission*, 91.

⁵⁷ Daso, *Doolittle*, 21.

⁵⁸ Lt Gen James Doolittle interview by Brig Gen George W. Goddard, 20 Jul 1967, USAF Oral History Collection, AFHRC call no. K239.0512-998 C.1, 7.

⁵⁹ Doolittle and Glines, *I Could Never be so Lucky Again*, 106; Medical Board Proceedings, Exhibit "A", 27 January 1927, Doolittle Military Personal File, National Archives, 01 Service Documents.pdf, 123.

⁶⁰ Doolittle and Glines, *I Could Never be so Lucky Again*, 108.

⁶¹ Daso, *Doolittle*, 22.

Although his accident in Chile resulted in a “50% loss of flexion” in both ankles, Doolittle was returned to flying status at McCook Field after six months of recuperation in Walter Reed General Hospital.⁶² At McCook he continued his duties as a test pilot and avid flier. His extensive experience flying in the Dayton area and acute powers of observation gave him confidence navigating in poor weather. He later recalled that while flying around McCook, “I knew instantly where I was, even if I could only see relatively a few feet ahead.” His commander, however, rebuked Doolittle for flying in “weather that no one else would fly in.”⁶³ His efficiency report of July 30, 1928 reflects “Satisfactory” performance by an officer whose “heart is only in flying and consequently, engineering assignments are not very desirable.”⁶⁴

Ironically, Doolittle’s penchant for flying in adverse weather provided him an opportunity to achieve one of the biggest engineering advances in aviation history. In January 1926, Harry F. Guggenheim encouraged his father, Daniel, to establish a fund for the promotion of aeronautics. The endowment spurred many of aviation’s early achievements, including Charles Lindbergh’s historic crossing of the Atlantic in 1927.⁶⁵ Although flight operations were commonplace in the late 1920s, inclement weather limited pilots, who predominantly flew “by the seat of their pants.” Harry Guggenheim established the Full Flight Laboratory to “encourage perfection of control in a fog” and “finance a study of and a solution to fog flying.”⁶⁶ The fund’s vice president, Emory S. “Jerry” Land, a Navy captain, selected Doolittle to head the Laboratory. Land justified his selection by noting that Doolittle

⁶² Efficiency report dated 25 September 1928, Doolittle Military Personal File, National Archives, 08 Efficiency Records.pdf, 41. Efficiency report p. 41.

⁶³ General James H Doolittle, interview by Lt Col Burch, Major Fogelman, and Capt Tate, 26 September 1971, AFHRC call no. K239.0512-793, 19-20.

⁶⁴ Efficiency report dated 30 June 1928, Doolittle Military Personal File, National Archives, 08 Efficiency Records.pdf, 40.

⁶⁵ Doolittle, Interview by Burch, Fogelman, and Tate, 1971, 7-8.

⁶⁶ Doolittle and Glines, *I Could Never be so Lucky Again*, 125.

possessed “a technical education that has given him a distinct advantage in the development of new equipment.”⁶⁷

In the fall of 1928 Doolittle moved to Mitchel Field on Long Island, New York to develop the technology and flying techniques required to take off and land aircraft in the blind. After initial testing, Doolittle concluded that instrument flying required three types of accurate information: altitude, heading, and aircraft attitude. To solve the problem of altitude, Doolittle tested a new altimeter that “was an order of magnitude more accurate than earlier altimeters.”⁶⁸ Doolittle sketched a diagram of an instrument to solve the latter two problems. The drawing provided the inspiration for the Sperry Gyroscope Company to build the first artificial horizon and the directional gyroscope.⁶⁹ The design of these instruments established the standard in aviation.

To achieve the goal of making a blind landing, Doolittle also used new ground equipment. The team installed fan and homing beacons on the airfield. The former caused an instrument rod to vibrate when the aircraft flew past the airfield boundary, providing a measure of distance. Another cockpit instrument used the beacons to display course information via two vibrating rods. With practice, Doolittle became adept at discerning his position relative to an in-bound course. To conduct a blind landing, Doolittle approached Mitchel Field at 200 feet, as indicated by his new altimeter. When he passed the outer edges of the field, he retarded the throttle and began a steady descent toward the ground until he landed. After methodically practicing the maneuver, Doolittle found that he “made better landings this way than...[visually] without the instrumentation.”⁷⁰

⁶⁷ Doolittle and Glines, *I Could Never be so Lucky Again*, 125-126.

⁶⁸ Doolittle and Glines, *I Could Never be so Lucky Again*, 136.

⁶⁹ Doolittle and Glines, *I Could Never be so Lucky Again*, 129.

⁷⁰ Doolittle, Interview by Burch, Fogelman, and Tate, 1971, 10-11.

On September 24, 1929, with Lieutenant Benjamin Kelsey as a safety observer in the front seat, Doolittle took off, flew a set course, and landed safely while under an instrument hood. Guggenheim witnessed the fifteen-minute flight and declared it history's first "blind flight."⁷¹ Doolittle considered his participation in the early blind-flying experiments his "most significant contribution to aviation."⁷² As Dik Daso observed, by developing blind flight, Doolittle had "applied science to modify technology in a successful effort to solve a practical problem."⁷³

After the success of the blind-flying experiments, fiscal reality forced Doolittle to consider his future. The modest pay of a first lieutenant made it difficult to support both his ailing mother and his mother-in-law. He could earn three times his military pay working for a civilian company as a test pilot. Thus, primarily for monetary reasons, Doolittle resigned his regular commission and joined Shell Oil as chief of its aviation division. Doolittle maintained his connection to the Air Service by applying for a reserve commission in the Specialist-Reserve. He was promptly accepted into the reserves as a major, bypassing the rank of captain.⁷⁴ The appointment marked Doolittle's first transition into civilian life. It would not be his last.

Civilian Life

Doolittle left the Army Air Service on February 15, 1930. The next day, he loaded his family into a \$25,000 Lockheed Vega provided by Shell for his travel needs. Overloaded with baggage, the aircraft failed to get airborne and crashed into a snow bank. The startled family emerged from the wreck unhurt; however, a headline in the local paper reading "Doolittle's First Civilian Hop in 12 Years Fails; Ex-Army Pilot Crashes in

⁷¹ Doolittle, Interview by Burch, Fogelman, and Tate, 1971, 12-13.

⁷² Doolittle and Glines, *I Could Never be so Lucky Again*, 141; Logbook Entry, 24 September 1924, Doolittle Papers, Series XVI, Box 1, Special Collections Department, McDermott Library, The University of Texas at Dallas.

⁷³ Daso, *Doolittle*, 31.

⁷⁴ Doolittle and Glines, *I Could Never be so Lucky Again*, 149.

Snow Before Start” stung his pride. Again, over confidence had led to a life-threatening mishap. Doolittle reported to his first day of work as a civilian “a very humble individual.”⁷⁵

The primary reason Shell Oil hired the celebrity pilot was to bask in his fame. In the 1930s, the best place to promote one’s employer as an aviator was on the racing circuit. Doolittle entered the 1931 inaugural Bendix cross-country air race with a new Laird Super Solution airplane. The course began in Burbank, California and terminated in Cleveland, Ohio. The race offered a first-place prize of \$7,500 and an additional \$2,500 bonus to anyone who set a new transcontinental record by continuing on to New York. It was just the sort of challenge Doolittle savored.

On September 4, 1931, shortly after midnight, seven pilots departed Burbank. Among those competing was Army Captain Ira C. Eaker, a promising young officer who had continued Doolittle’s instrument research. Nine hours, ten minutes, and twenty-one seconds after Doolittle departed California, he landed in Cleveland.⁷⁶ Unsure of his victory, Doolittle refueled his aircraft; and he continued on to New York despite poor weather conditions. He arrived in New York eleven hours and eleven minutes after his early-morning takeoff. That day, Doolittle secured another significant footnote in the history of aviation by becoming the first man to traverse the continent in less than twelve hours. His work was not, however, complete. He took off and returned to Cleveland to re-join Joe and his two sons. Upon arrival in Ohio, he called his supervisor, Shell Vice President Alexander Fraser, who invited him to join him at a celebration in Doolittle’s honor. Never one to turn down a party, Doolittle flew the Super Solution to St. Louis that evening.

⁷⁵ Doolittle and Glines, *I Could Never be so Lucky Again*, 153.

⁷⁶ Daso, *Doolittle*, 34.

As Daso remarked, through these feats of aviation endurance, “Doolittle was demonstrating the practicality of air travel.”⁷⁷

Doolittle turned to another contest of speed to accomplish his next aviation milestone. He entered the 1932 Thompson Trophy race flying the notoriously dangerous R-1 Gee Bee racer. When Doolittle arrived at Bowles airport, near Springfield, Massachusetts, the R-1 had already killed one of its pilots and another lay in the hospital severely injured. Indeed, the aircraft was built for speed, not safety. Doolittle’s engineering eye surveyed the eighteen-foot long racer with small, stubby wings and a 750-horsepower Wasp engine.⁷⁸ Although Doolittle “didn’t trust this little monster,” he was confident he could safely harness its immense power.⁷⁹ He described flying the unstable aircraft as being “like balancing...an ice cream cone on the tip of your finger.”⁸⁰ Nevertheless, carefully managing the temperamental airplane paid dividends. In the Thompson trials, Doolittle set a new world speed record of 294.38 miles per hour, collecting the \$1,575 prize as the race’s fastest qualifier. Flying with caution, Doolittle easily won the Thompson race and its \$4,500 purse with a more modest performance of 252.686 miles per hour, still a race record.⁸¹ Doolittle later reflected that he flew the R-1 because “it was the fastest airplane in the world at the time.”⁸² He was, however, disturbed to learn that while he jockeyed the “most dangerous airplane” he ever flew around race pylons, newspaper photographers remained fixated on Joe and his boys to capture their expressions should Doolittle meet his demise. He later acknowledged the experience “had a profound effect” on his thinking.⁸³ Consequently, the leading race pilot

⁷⁷ Daso, *Doolittle*, 34.

⁷⁸ Daso, *Doolittle*, 35.

⁷⁹ Doolittle and Glines, *I Could Never be so Lucky Again*, 168 and Daso, *Doolittle*, 36.

⁸⁰ Doolittle and Glines, *I Could Never be so Lucky Again*, 168.

⁸¹ Vorderman, *The Great Air Races*, 158-159; Daso, *Doolittle*, 35-36.

⁸² Doolittle and Glines, *I Could Never be so Lucky Again*, 170.

⁸³ Doolittle and Glines, *I Could Never be so Lucky Again*, 171.

of his day made a decision that may have saved his life — he retired from air racing.

Because of Doolittle's prominence in aviation, Major General James F. McKinley selected him as a civilian member of the Special Committee on Army Air Corps. The panel was known as the "Baker Board" in honor of the committee's chairman, former Secretary of War Newton D. Baker. In 1934, President Franklin D. Roosevelt canceled all private air mail agreements in response to a Congressional investigation of impropriety during the contract solicitation process.⁸⁴ Tragically, a number of Air Corps pilots died when the underequipped and improperly trained service assumed air mail duties. Following the reinstatement of the civilian contracts, the War Department charged the Baker Board with making "a constructive study and report upon the operations of the Army Air Corps and the adequacy and efficiency of its technical flying equipment and training for the performance of its missions in peace and war."⁸⁵ Accordingly, the 12-member committee conducted a 25-day investigation and interviewed 105 witnesses from across the aviation committee. The testimony generated 4,283 pages of transcription for the Congressional record.⁸⁶

Doolittle relished the opportunity to contribute his "thoughts on the future of military aviation in a public forum."⁸⁷ His views, however, did not correspond with the Baker Board's majority consensus. The panel concluded establishing a separate "Department of Air" would constitute "a serious error, jeopardize the security of the Nation in an emergency, and be an unnecessary tax burden."⁸⁸ The other 11 members of the board, including Chief of the Air Corps Major General

⁸⁴ Doolittle and Glines, *I Could Never be so Lucky Again*, 183.

⁸⁵ Newton D. Baker, *Final Report of War Department Special Committee on Army Air Corps*, (Washington, DC: Government Printing Office, 1934), 1.

⁸⁶ Baker, *Final Report of War Department Special Committee on Army Air Corps*, 2.

⁸⁷ Doolittle and Glines, *I Could Never be so Lucky Again*, 184.

⁸⁸ Baker, *Final Report of War Department Special Committee on Army Air Corps*, 63.

Benjamin D. Foulois, endorsed the recommendation.⁸⁹ Doolittle, however, insisted in presenting a dissenting opinion:

I believe in aviation—both civil and military. I believe that the future security of our Nation is dependent upon an adequate air force. This is true at the present time and will become increasingly important as the science of aviation advances and the airplane lends itself more to the art of warfare. I am convinced that the required air force can be more rapidly organized, equipped, and trained if it is completely separated from the Army and developed as an entirely separate arm. If complete separation is not the desire of the committee, I recommend an air force as a part of the Army, but with a separate budget, a separate promotion list, and removed from the control of the General Staff. These are my sincere convictions. Failing either, I feel that the Air Corps should be developed and expanded under the direction of the General Staff as recommended above.⁹⁰

It would not be the last time Doolittle presented his controversial views in the public arena.

Doolittle used his position in Shell Oil to advocate for another of his beliefs—industrial scale production of high-octane aviation fuel. One-hundred-octane aviation fuel enabled aircraft engines to operate at higher compression ratios, thus enhancing both power and efficiency. Doolittle believed the mass production of such fuel would benefit his company and the armed services. But, the industry faced “a chicken or the egg dilemma.” Aircraft were not designed to use high-octane aviation fuel because it was not then affordable. Oil companies did not produce the fuel because so few aircraft used it.⁹¹

In early 1934, an order of 1,000 gallons of iso-octane from Doolittle’s colleagues at Wright Field advanced progress significantly.

⁸⁹ In his memoirs, Foulois later remarked he regretted not joining Doolittle in opposing the board’s findings. Major General Benjamin D. Foulois with Colonel C. V. Glines, *From the Wright Brothers to the Astronauts: The Memoirs of Major General Benjamin D. Foulois* (New York, McGraw-Hill Book Company, 1968), 261.

⁹⁰ Baker, *Final Report of War Department Special Committee on Army Air Corps*, 75.

⁹¹ Lt General James H. Doolittle, Interview, 23 June 1965, USAF Oral History Collection, AFHRC call no. K239.0512-623, 11.

The chemical, previously only produced in a laboratory environment at the exorbitant cost of nearly \$20 a gallon, was an essential ingredient of high-quality aviation fuel.⁹² Innovative engineers from Shell Chemical filled the order in April by modifying a smaller production facility outside of Pittsburg, California, and charging the Air Corps \$2.50 a gallon.⁹³ Meanwhile, Doolittle convinced fuel laboratories across the oil industry to begin evaluating new fuel products for anti-knock rating.⁹⁴ Indeed, the company soon received orders for the niche product. In the ensuing eight months, Shell sold 18,750 gallons with an average price dropping to 71¢ per gallon, about twice its sustained production cost.⁹⁵ At the close of the year, the company's annual report advertised, "In April we started making iso-octane in a small plant. As far as we know, the Shell Chemical was the first company selling iso-octane in car loads."⁹⁶

With momentum building, Doolittle convinced Shell management to invest heavily in the mass production of 100-octane fuel. Consequently, in 1935, Shell built three large-scale production facilities. By June 1936, the refineries achieved capacity to produce 6 million gallons of iso-octane a year.⁹⁷

The decision signified a substantial risk for Doolittle's career. In a 1949 publication titled *Aviation Fuels*, S. D. Herron noted Doolittle "in particular risked his future by persuading Shell to go heavily into plant expansion for the production of 100 [octane] fuel."⁹⁸ Indeed, in the bottom of the Great Depression, Doolittle's employer devoted over \$2

⁹² In the 1930s, Wright Field engineers blended iso-octane with high quality fuel from California and added tetraethyl lead to achieve an octane rating of 100. Kendall Beaton, *Enterprise in Oil: A History of Shell in the United States* (New York: Appleton-Century-Crofts, Inc., 1957), 535, 560-561.

⁹³ The original order only netted the company a profit of 10 cents a gallon. Beaton, *Enterprise in Oil*, 535; Quentin James Reynolds, *The Amazing Mr. Doolittle: a Biography of Lieutenant General James H. Doolittle* (New York: Appleton-Century-Crofts, 1953), 150-151.

⁹⁴ Beaton, *Enterprise in Oil*, 550.

⁹⁵ Beaton, *Enterprise in Oil*, 535.

⁹⁶ Quoted in Beaton, *Enterprise in Oil*, 535.

⁹⁷ Beaton, *Enterprise in Oil*, 561.

⁹⁸ Robert Schlaifer and S. D. Herron, *Development of Aircraft Engines and Fuels: Two Studies of relations between government and business* (Andover, MA: Andover Press, 1950), 607.

million to develop the ancillary product with no established market.⁹⁹ In 1936, however, a majority of the iso-octane produced remained in Shell storage facilities awaiting a customer.¹⁰⁰ Accordingly, many of the company's employees condemned the investment as "Doolittle's million-dollar blunder."¹⁰¹ Likewise, one member of the oil industry disparaged the ongoing 100-octane tests at Wright Field, stating that the presiding engineers qualified for "admission to mental institutions."¹⁰²

Nonetheless, Wright Field test data validated Doolittle's vision. Lieutenant Frank Klein, a fellow MIT alumni, demonstrated 100-octane improved engine power output by 15% to 30% compared to lower grade fuels.¹⁰³ When Klein's results failed to garner attention from the Army's General staff, the enterprising young Lieutenant published his findings in the *Journal of the Aeronautical Sciences*.¹⁰⁴ The modest four-page article spurred Wright Aero company to design and build a test engine to 100-octane fuel specifications. Wright Aero's specialty 1820 "Cyclone" engine produced more power, and perhaps more importantly, also demonstrated superior fuel economy. As Heron noted, the results illustrated the potential of 100-octane fuel in "regard to abnormally low fuel consumption and corresponding increase of range."¹⁰⁵

Despite the improved performance, many in the War Department opposed adopting 100-octane fuel as an aviation design standard. The Army General Staff, for instance, believed the logistical benefit of a fuel common to land and air vehicles outweighed the aerial performance advantage. Others questioned industry's ability to produce sufficient

⁹⁹ Reynolds, *The Amazing Mr. Doolittle*, 163.

¹⁰⁰ Beaton, *Enterprise in Oil*, 566.

¹⁰¹ Doolittle, Interview by Puryear, 1977, Tape 2 Side 1, 13.

¹⁰² Schlaifer and Herron, *Development of Aircraft Engines and Fuels*, 606.

¹⁰³ F. D. Klein "Aircraft Performance with 100 Octane Fuel," *Journal of the Aeronautical Sciences* 2, no. 2 (March 1935): 47.

¹⁰⁴ Reynolds, *The Amazing Mr. Doolittle*, 157-158.

¹⁰⁵ Schlaifer and Herron, *Development of Aircraft Engines and Fuels*, 606.

quantities of the costly fuel in times of conflict.¹⁰⁶ Accordingly, in May 1936, Doolittle used his time on reserve duty to conduct a study “on the availability of 100 octane gasoline to meet needs of Army and Navy in war.”¹⁰⁷ Doolittle’s advocacy helped generate the formation of a committee to investigate the matter the following November. Based on the conclusive data and affirmation of supply availability, the committee recommended the adoption of 100-octane fuel for all combat aircraft.¹⁰⁸ The War Department endorsed the committee’s finding and established 100-octane fuel as a design standard effective January 1, 1938.¹⁰⁹

Meanwhile, across the Atlantic, the Royal Air Force (RAF) conducted a similar evaluation of high-octane aviation fuel. Spurred by the publishing of Klein’s paper, RAF engineers conducted tests of their own and achieved similar results.¹¹⁰ In early 1937, The Air Ministry concluded that high-octane fuel “offers a measure of increased engine efficiency obtainable by no other means” and established a committee to study the matter.¹¹¹ Similar to the War Department, the island nation’s Air Ministry questioned if ample amounts of the fuel would be available in a time of war.¹¹²

Perhaps in hope of securing a new military customer, Fraser dispatched Doolittle to Europe in the Fall of 1937. Because Shell was a global company, Doolittle maintained close contact with the European

¹⁰⁶ Schlaifer and Herron, *Development of Aircraft Engines and Fuels*, 607.

¹⁰⁷ Efficiency Report dated 2 June 1936, Doolittle Military Personal File, National Archives, 08 Efficiency Records.pdf, 54.

¹⁰⁸ Doolittle and Glines, *I Could Never be so Lucky Again*, 177; a transcript of the committee hearings is reproduced in Reynolds, *The Amazing Mr. Doolittle*, 161-165.

¹⁰⁹ Beaton, *Enterprise in Oil*, 566.

¹¹⁰ H. Moss, D.Sc., report, “Fuels of High Octane Number,” May 1936, AVIA 6/14219, The National Archives, United Kingdom.

¹¹¹ “First Report of the High Octane Fuel Committee,” February 1937, AIR 2/2151, National Archives, United Kingdom.

¹¹² Many works claim that 100-octane aviation fuel was exclusively produced in the U.S. during the Battle of Britain. Gavin convincingly argues that the UK secured the fuel from a diverse number of suppliers. See Gavin Bailey, “The Narrow Margin of Criticality: The Question of the Supply of 100-octane Fuel in the Battle of Britain” *The English Historical Review*, 123, no. 510 (April 2008), Oxford University Press: 394-411. Retrieved from JSTOR.

aviation industries.¹¹³ Therefore, after arriving in England by ship in late September, Doolittle spent the ensuing days meeting with British officers and design engineers.¹¹⁴ He carried a copy of Wright Aero's 1820 Cyclone test results, presumably to reference during his many engagements.¹¹⁵ Doolittle penned copious technical notes documenting his observations of the RAF's various technical advances. For instance, he noted because the Rolls Royce engines were "well over strength," the RAF could operate test squadrons fueled by 100-octane gasoline. Doolittle also recorded design features of the new Spitfire, Hurricane, and "beautiful" Wellington bomber.¹¹⁶ Doolittle departed London on October 14 to visit associates in France and Germany.¹¹⁷ Coincidentally, on October 12 the RAF Air Council declared "The development of 100-octane engines should go ahead on the assumption that arrangements will be developed to ensure a sufficient supply of 100-octane fuel."¹¹⁸ Although the record does not indicate Doolittle's visit affected the RAF's decision directly, the Shell executive returned to America with another air force committed to high-octane fuel.

On April 30, 1944, Shell marked the 10th anniversary of its first delivery of iso-octane to the Army Air Corps with the opening of a new high-capacity, twin-catalytic ("cat") cracker refinery. Under Secretary of War Robert Patterson spoke at the event, which was broadcast across the world. Speaking from his headquarters in England, Lieutenant General James Doolittle expressed his "appreciation to the folks back home who are producing the materials necessary to permit us to carry on our

¹¹³ Doolittle, Interview by Burch, Fogelman, and Tate, 1971, 35.

¹¹⁴ Entries between 25 September – 11 October 1937 in personal notebook, Doolittle papers, Series XVI, McDermott Library

¹¹⁵ Loose-leaf note page, "Wright Aero (1820)," in 1937 personal notebook, Doolittle papers, Series XVI, McDermott Library.

¹¹⁶ Entries for 5, 9 October 1937 in personal notebook, Doolittle papers, Series XVI, McDermott Library.

¹¹⁷ Before leaving London, Doolittle dispatched over 330 postcards to friends, family, and work associates. Names listed in entries on pages 30 November to 13 December 1937 in personal notebook, Doolittle papers, Series XVI, McDermott Library; Logbook Entries, October 1937, Doolittle Papers, Series XVI, Logbook 8, McDermott Library.

¹¹⁸ Minutes, "Decisions at the 96th Meeting," 12 October 1937, AIR 2/2151, National Archives, United Kingdom.

bombing operations.” The Eighth Air Force commander remarked the product was “virtually the life blood of our bombers and fighters.”¹¹⁹ The *New York Times* marked the occasion by reporting:

It should not be forgotten...that among the many debts which American airpower owes to Lieutenant General Doolittle is his insistence a decade ago, when, as a civilian, he was in charge of the aviation development of Shell, that his company carry on energetically research in 100-octane gasoline.¹²⁰

Indeed, the investment paid off handsomely for Shell oil and for Allied pilots in World War II. When the Battle of Britain commenced in 1940, the innovative fuel provided the Hawker Hurricanes and Supermarine Spitfires a marked advantage over the 87 octane-fed Bf-109s.¹²¹ Likewise, as commander of the Eighth Air Force, Doolittle’s entire air fleet benefited from the aviation advancement. Accordingly, as demand increased, so did Shell’s production. By 1938, the company was producing 100-octane fuel at a cost of 17.5 cents per gallon—only 2.5 cents more than traditional 87-octane fuel.¹²² The price continued to fall as production ramped up to the wartime peak of 600,000 barrels a day in March 1945.¹²³ The results are a testament to Doolittle’s technical foresight, academic credentials, and influential connections across government and industry.

In 1939, a return trip to Europe provided an opportunity to foresee the impending war in Europe. While in Germany, Doolittle observed a significant change in the aircraft industry compared to his visit in 1937.

¹¹⁹ James H. Doolittle, radio broadcast transcript, “10th Anniversary 100-octane Gasoline ‘Army Hour’ Program,” 30 April 1944, Doolittle Papers, Box 38 Speeches and Articles, Library of Congress.

¹²⁰ “Anniversary of Power,” *New York Times*, 30 April 1944. Retrieved from ProQuest.

¹²¹ Colin Gray, “Dowding and the British Strategy of Air Defense 1936-1940,” in *Successful Strategies: Triumphant in War and Peace from Antiquity to the Present*, ed. Murray, Williamson, and Richard Sinnreich, (New York: Cambridge University Press, 2014), 275; The Rolls Royce Merlin II and III engines produced 30 percent more power than the original version designed to operate on 87-octane fuel Bill Sweetman, *High Speed Flight* (London: Janes Publishing, 1984), 49.

¹²² Doolittle and Glines, *I Could Never be so Lucky Again*, 177-178.

¹²³ Beaton, *Enterprise in Oil*, 587.

On July 28, he penned an entry in his personal notebook that income tax in Germany was 35 percent. He also noted although luxury items were inexpensive, food and other necessities remained costly. Doolittle speculated everyone in Germany “spends their dough ands [sic] keeps it in circulation.”¹²⁴ The following day he wrote, “wood piled up over areas several acres in extent...Von Wunce [his German escort] advised they were for paper and textiles but looked like they might be used for trenches.”¹²⁵ On August 10 he also noted “Germany 340,000 tons of aviation gasoline. In 1939 imported 110,000-120,000 tons. In 1940 a new 600,000 (±40,000) ton [sic] going in in 1940.”¹²⁶ Doolittle concluded from these observations that Germany was mobilizing for war.

When Doolittle returned to America, he contacted his friend Hap Arnold. Ever since first meeting at Rockwell Field, Arnold and Doolittle had developed a close relationship and their correspondence clearly indicates a mutual fondness.¹²⁷ This visit with Doolittle’s former commander, however, was somber. Doolittle told Arnold of his belief that war with Germany was inevitable and asked to return to active duty. Arnold agreed, however, because Doolittle held the rank of major in the reserves, recalling him required Congressional intervention. In July 1940, Congress passed the necessary law permitting Doolittle and Major Ted Curtis of Eastman Kodak to return to active duty.¹²⁸ Similar to Cincinnatus centuries before, Doolittle was called into service to his country during a time of crisis. The orders were effective for a period of only one year.¹²⁹ He would serve for more than six.

¹²⁴ Entry for July 28 1939 in personal notebook, James H. Doolittle Papers, Series XVI, McDermott Library.

¹²⁵ Entry for 29 July 1939 in personal notebook, Doolittle papers, Series XVI, McDermott Library.

¹²⁶ Entry for 10 August 1939 in personal notebook, Doolittle papers, Series XVI, McDermott Library.

¹²⁷ J. H. Doolittle to Major General H. H. Arnold, letter, 7 March 1939, Henry Harley Arnold Papers, Box 13, Reel 13, Library of Congress.

¹²⁸ Doolittle, Interview by Burch, Fogelman, and Tate, 1971, 35-36.

¹²⁹ Special Orders No. 149, 25 June 1940, Doolittle Papers, Series I, Box 2, McDermott Library.

Early World War II Career

Arnold recognized Doolittle possessed unique business skills and put him to work coordinating industrial support for the expanding Army Air Force.¹³⁰ Logically, the Air Corps assigned him to Indianapolis, Indiana, to oversee Allison Engine Company's manufacturing of aircraft engines. The assignment took advantage of Doolittle's "broad knowledge of the commercial aeronautical industry" and "technical and administrative ability."¹³¹ Doolittle soon moved to Detroit, Michigan to oversee the transition of the motor city's industrial production from cars to aircraft. He described the job as managing a "shotgun wedding between the aviation and automobile industry."¹³² The former car manufactures were not interested in building aircraft, and the aviation industry did not want to encourage new competition. Doolittle employed his technical expertise, personal charisma, and tact to mediate between the two communities. He found the dynamics fascinating and remarked that his time in Detroit "was the most interesting period of my career."¹³³ His efficiency report for this period remarked "most energetic and resourceful in accomplishing a project, even to the point of disregarding regulations and following the usual channels of military authority."¹³⁴

On January 2, 1942, Doolittle reported to Washington as a new lieutenant colonel for duties as the director of operational requirements on General Arnold's staff.¹³⁵ Arnold had him evaluate the Martin B-26 Marauder, which had developed a reputation as a dangerous airplane. After a series of flight tests and stability demonstrations, Doolittle concluded that the aircraft was safe – the problem was training. He

¹³⁰ Doolittle, Interview by Burch, Fogelman, and Tate, 1971, 28.

¹³¹ Echols to Doolittle, letter, 29 June 1940, Doolittle Papers, Box 16, Correspondence 1940, Library of Congress.

¹³² Doolittle, Interview by Burch, Fogelman, and Tate, 1971, 39.

¹³³ Doolittle, Interview by Burch, Fogelman, and Tate, 1971, 39.

¹³⁴ Efficiency Report dated 30 June 1941, Doolittle Military Personal File, National Archives, 08 Efficiency Records.pdf, 56.

¹³⁵ Doolittle and Glines, *I Could Never be so Lucky Again*, 209-210.

recommended the continued production of the B-26 with a new training regime to prepare its pilots.¹³⁶ Pleased with Doolittle's results, Arnold gave him the assignment that would immortalize Doolittle's reputation as a national hero – the raid on Tokyo.

The famous "Doolittle Raid" originated in the Oval Office. After the attack on Pearl Harbor, President Roosevelt was "insistent" his Joint Chiefs find a "means of carrying home to Japan proper, in the form of a bombing raid, the real meaning of war."¹³⁷ The idea to launch an Army medium-range bomber from an aircraft carrier, however, did not originate with Doolittle. The idea was brought to Chief of Naval Operations Admiral Ernest King, who in turn, consulted with Arnold. The meeting placed the idea into motion. Arnold tapped Doolittle to plan the mission and train the aircrew for the raid. As Arnold later recalled, Doolittle's courage, technical aptitude, and leadership ability made his selection to "lead the nearly suicidal mission...a natural one."¹³⁸ To expedite the process, Arnold granted Doolittle "first priority on anything you need to get the job done."¹³⁹

Doolittle faced significant technical challenges in planning the Tokyo Raid. The Army and Navy agreed the North American B-25B Mitchell bomber was the best aircraft for the mission because it provided the optimal combination of range and short-takeoff performance.¹⁴⁰ Additionally, its modest 67 ½-foot wingspan enabled the B-25 to launch from an aircraft carrier.¹⁴¹ The range of a B-25, however, was only 1,300 statute miles, well short of the 2,400 statute miles required for the mission.¹⁴² Unlike Doolittle's transcontinental flights, the Pacific

¹³⁶ Doolittle and Glines, *I Could Never be so Lucky Again*, 211.

¹³⁷ Arnold, *Global Mission*, 298.

¹³⁸ Arnold, *Global Mission*, 299.

¹³⁹ Doolittle and Glines, *I Could Never be so Lucky Again*, 218-219.

¹⁴⁰ Daso, *Doolittle*, 46.

¹⁴¹ On February 1, two B-25s departed from the deck of the newly commissioned *Hornet* aircraft carrier to confirm this capability. Doolittle and Glines, *I Could Never be so Lucky Again*, 212, 221.

¹⁴² Daso, *Doolittle*, 46-47.

provided no opportunity to refuel. In order to succeed, Doolittle needed to make significant design modifications to extend the aircraft's range.

Thus, as he had done twenty years prior, Doolittle traveled to Dayton to consult with his fellow engineers.¹⁴³ While at Wright Field, he settled on several design changes. First, Doolittle decided to install three additional fuel tanks that increased the B-25B's fuel load from 696 to 1,141 gallons.¹⁴⁴ To reduce weight, he removed radio equipment, the sensitive Norden bombsight, and the rear-facing machine guns. He also installed cameras to document the historic raid.¹⁴⁵ He calculated the improvements extended the range of the B-25 to 2,400 statute miles while flying at 5,000 feet. In January 1942, he sent 24 B-25Bs to Minneapolis, Minnesota, for modification according to his requirements.¹⁴⁶

With the technical modifications underway, Doolittle turned his attention to selecting aircrew. His first task was to identify the squadrons with the most experience flying the B-25. The answer was the 17th Bomb Group consisting of the 34th, 37th, and 95th Squadrons and the associated 89th Reconnaissance Squadron, all stationed in Pendleton, Oregon.¹⁴⁷ Doolittle queried the units for volunteers interested in an unspecified, dangerous mission. Because every crewmember volunteered, Doolittle asked the commanders for a list of the most qualified personnel. To aid in the final selection, Doolittle chose the 89th Reconnaissance Squadron commander, Major John A. Jack Hilger, to serve as his deputy.¹⁴⁸ He did not select, however, the 17th Group commander, a full colonel who outranked him, to participate in the

¹⁴³ Doolittle and Glines, *I Could Never be so Lucky Again*, 222.

¹⁴⁴ Doolittle and Glines, *I Could Never be so Lucky Again*, 223.

¹⁴⁵ Daso, *Doolittle*, 48.

¹⁴⁶ Doolittle and Glines, *I Could Never be so Lucky Again*, 224.

¹⁴⁷ Doolittle and Glines, *I Could Never be so Lucky Again*, 224.

¹⁴⁸ Doolittle and Glines, *I Could Never be so Lucky Again*, 224.

mission.¹⁴⁹ Because Arnold had yet to name him as the raid's leader, Doolittle eliminated any potential competition for the assignment.¹⁵⁰

The airplanes and crews arrived at Eglin Air Force Base in Fort Walton Beach, Florida, between February 17 and March 3.¹⁵¹ Because the mission's primary objectives were political rather than tactical, Doolittle elected a low-altitude attack with incendiary bombs. Also, to conserve fuel, he planned for the aircraft to takeoff and fly individually to their targets. Therefore, the crews immediately began practicing the skills of over-water navigation, night flying, and low-altitude bombing. The Navy dispatched Lieutenant Henry L. "Hank" Miller to instruct the pilots on carrier operations. The pilots meticulously practiced the delicate art of taking off with a heavily laden B-25 at a nearby auxiliary field.¹⁵² To minimize the takeoff roll, the pilots coaxed their aircraft into the air "almost in a stall."¹⁵³

The pilots had little time to perfect these complex maneuvers. On March 25 the airplanes were flown to Sacramento Air Depot for final inspection and then on to Alameda Naval Air Station in San Francisco. After the aircraft had been loaded onto the *Hornet*, the carrier left port on April 2. Once underway, Doolittle revealed the true nature of the mission to the enthusiastic crews. He allowed the crews to select their own targets but provided specific instructions not to bomb the Emperor's Palace.¹⁵⁴ Doolittle also ordered the crews to land in China as planned and not to divert to Russia. Both directives underscored the political significance of the raid.

¹⁴⁹ Doolittle, Interview by Puryear, 1977, Tape 2, Side 2, 2.

¹⁵⁰ Doolittle and Glines, *I Could Never be so Lucky Again*, 230.

¹⁵¹ Doolittle and Glines, *I Could Never be so Lucky Again*, 225.

¹⁵² The B-25s were loaded to a gross weight of 31,000 pounds. 2,000 pounds above the maximum load. Doolittle and Glines, *I Could Never be so Lucky Again*, 226.

¹⁵³ Daso, *Doolittle*, 49.

¹⁵⁴ Daso, *Doolittle*, 55.

In the early morning of April 18, 1942, Japanese picket boats intercepted the career fleet.¹⁵⁵ Before the *Hornet* had left harbor, Doolittle and Admiral William F. Halsey discussed the possibility of premature discovery and decided the aircraft would be launched if there remained even a remote chance of success. The mission required the element of surprise, and Halsey needed the deck clear to launch fighters in event of enemy attack.¹⁵⁶ The launch was planned for that evening, and Doolittle was 250 miles farther from his target than planned when his B-25 climbed into the air. From that distance, there was no guarantee the aircraft could reach landing fields in China.¹⁵⁷ Fifteen other crews followed in order with full knowledge they might not survive. Doolittle reached Tokyo, released four 500-pound bombs, and flew on to China. A providential tailwind allowed him to reach the mainland. He could not, however, acquire the signal of the radio beacon intended to guide him to a landing at Chuchow field in China.¹⁵⁸ Out of gas, Doolittle ordered his crew to bail out.

As Doolittle collected his thoughts in China, he assessed the mission as having been a tactical failure. He reasoned every aircraft on the mission was likely lost. He was right. One crew disobeyed orders and diverted to Russia, and the fifteen other crews had bailed out of their aircraft. The 16 bombers, intended for delivery to the 10th Air Force in China, were a total loss.¹⁵⁹ Back at home, however, Arnold quickly recognized the mission's political success. As word of the raid spread, the nation rejoiced with the first good news of the war. Additionally,

¹⁵⁵ Craig Nelson, *The First Heroes: The Extraordinary Story of the Doolittle Raid – America's First World War II Victory*, (New York: Penguin Books, 2003), 118-120.

¹⁵⁶ Thomas Alexander Hughes, *Admiral Bill Halsey: A Naval Life* (Cambridge, MA, Harvard University Press, 2016), 163-164.

¹⁵⁷ Daso, *Doolittle*, 54.

¹⁵⁸ Unbeknownst to Doolittle, the same tailwind that helped him reach China precluded the advance team from reaching Chuchow field; hence, the homing beacon was never installed. James M. Scott, *Target Tokyo: Jimmy Doolittle and the Raid that Avenged Pearl Harbor* (New York: W. W. Norton & Company, 2015), 246.

¹⁵⁹ Doolittle and Glines, *I Could Never be so Lucky Again*, 219

stung by the unforeseen attack, Japanese air defenses retrenched to defend the homeland. The reaction set in motion a turn of events that would in part lead to the Battle of Midway.¹⁶⁰

Doolittle had been uniquely qualified to lead the raid on Tokyo. The mission drew on the technical expertise in aviation he developed as a trained engineer, test pilot, and transcontinental flyer. He rapidly formulated a plan and acquired resources to implement his technical vision. Additionally, Doolittle understood the political ramifications of the mission. He knew the president's intent was to send a political message, not to achieve tactical destruction. As Daso observed, Doolittle's mission eschewed "almost every accepted doctrinal idea for bombardment openly held by the [Army Air Forces]."¹⁶¹ That was perhaps, in part because Doolittle left the Army for Shell and never attended the Air Corps Tactical School, where strategic bombing doctrine was formulated and taught. For whatever reason, Doolittle's plan fulfilled FDR's vision for retribution against the Japanese homeland. He had clearly trained his men well to accomplish the mission. Interestingly, no crewmember on the Tokyo Raid, including Doolittle himself, had any combat experience.¹⁶² Finally, Doolittle exhibited a great deal of personal courage and sound leadership during the raid. He was aware of the personal risk incurred by taking off of the *Hornet*. He did not hesitate and, more importantly, the crews that followed him did not either. The great significance of the mission and Doolittle's inspired leadership formed a bond between the men that survived for decades.

¹⁶⁰ Eric Larrabee, *Commander in Chief: Franklin Delano Roosevelt, his Lieutenants, and Their War* (Annapolis: Naval Institute Press, 1987), 366.

¹⁶¹ Daso, *Doolittle*, 59.

¹⁶² Daso, *Doolittle*, 64.

The surviving raiders met annually until their final historic toast on November 9, 2013.¹⁶³

While still in China, Doolittle received the news that he had been promoted to brigadier general, bypassing the grade of colonel. He also received orders directing him to “proceed on or about May 5, 1942, from Chungking, China, to Washington, DC, by the most expeditious method, reporting upon arrival to the Commanding General, Army Air Forces, for instructions.”¹⁶⁴ Upon Doolittle’s arrival in Washington, President Roosevelt promptly pinned the Congressional Medal of Honor on his chest under the watchful eye of Generals Arnold and George Marshall and of his wife Joe. Doolittle later recollected that “I believe that General Arnold gave me more credit than was due, and I believe General Marshall gave me more credit than was due, as a result primarily of the Tokyo raid.”¹⁶⁵ Despite this modesty, Doolittle’s accomplishments thrust him into the ranks of the Army’s senior leaders.

Following the ceremony, Arnold, searching for a job commensurate with Doolittle’s new rank, submitted his name to General Douglas MacArthur in the Pacific for command of the Fifth Air Force. MacArthur, however, did not want an inexperienced air racer and instead chose General George C. Kenney as his senior Airman.¹⁶⁶ Instead, Doolittle was assigned to command the newly formed Twelfth Air Force under General Dwight Eisenhower. The Twelfth was created to support Operation Torch – the invasion of North Africa. Like MacArthur, Ike valued maturity in his subordinate commanders and was reluctant to

¹⁶³ Desiree N. Palacios, “Doolittle Raiders honored with ‘final toast,’” *Air Force News Service*, 10 November 2013. Retrieved from <http://www.af.mil/News/ArticleDisplay/tabid/223/Article/467482/doolittle-raiders-honored-with-final-toast.aspx>.

¹⁶⁴ Special Orders Number 35, 4 May 1942, Doolittle Papers, Series I, Box 2, McDermott Library.

¹⁶⁵ Doolittle, Interview by Burch, Fogelman, and Tate, 1971, 55.

¹⁶⁶ Herman S. Wolk, “Renaissance Man of Aviation,” *Air Power History*, 40, no. 4 (Winter 1993): 7.

accept the unproven “wild stunt pilot.”¹⁶⁷ In 1942, Eisenhower remarked:

[I]n the higher positions of a modern Army, Navy and Air Force, rich organizational experience and an orderly, logical mind are absolutely essential to success. The flashy, publicity-seeking adventurer can grab the headlines and be a hero in the eyes of the public, but he simply can't deliver the goods in high command. On the other hand, the slow, methodical, ritualistic person is absolutely valueless in a key position. There must be a fine balance—that is exceedingly difficult to find.¹⁶⁸

Eisenhower, therefore, requested Generals Spaatz, Walter H. Frank, or Eaker in lieu of the inexperienced general.¹⁶⁹ Arnold and Marshall responded by insisting Doolittle was qualified for the position. Ike was stuck with him.¹⁷⁰

Eisenhower's doubts were not without reason. Doolittle lacked the credentials of a typical flag officer in 1942. When Doolittle took charge of the nascent Twelfth Air Force, he had not commanded “anything bigger than about a flight.”¹⁷¹ While his peers had gained valuable command experience during the 1930s, Doolittle increased profits for Shell Oil. Additionally, Doolittle possessed no military staff experience and lacked the professional military education that his fellow career officers had received. Doolittle never attended the Army's Command and General Staff School. This school prepared middle-grade officers for staff assignments to corps and division levels. Hence, Doolittle never received formal training in Army combined-arms tactics, Army command-and-

¹⁶⁷ Doolittle, Interview by Puryear, 1977, Tape 1 Side 2, 2.

¹⁶⁸ Quoted in Phillip S. Meilinger, *Hoyt S. Vandenberg: The Life of a General* (Indianapolis: Indiana University Press, 1989), 203.

¹⁶⁹ Doolittle, Interview by Burch, Fogelman, and Tate, 1971, 43.

¹⁷⁰ Doolittle later remarked that if Eisenhower refused his appointment, then any failings in Africa would reflect his decision-making. However, if Doolittle failed it would reflect poorly on Marshall and Arnold. Gen James H. Doolittle, Interview by Prof. Ronald Schaffer, 24 August 1979, USAF Oral History Collection, AFHRC call no. K239.0512-1206, 22.

¹⁷¹ Doolittle, Interview by Burch, Fogelman, and Tate, 1971, 49.

staff functions, or duties of a general staff at the corps level.¹⁷² Missing the Army War College prevented Doolittle from receiving instruction in the practice of high-level command.¹⁷³ Finally, because he did not attend the Air Corps Tactical School, Doolittle never received explicit instruction in the industrial-web theory that provided the doctrinal foundation for the strategic bombing campaign against Germany.¹⁷⁴ Doolittle would have to learn a great deal on the job.

Doolittle assumed command of the Twelfth Air Force on September 23, 1942, and quickly acquainted himself with the duties of leading a numbered air force.¹⁷⁵ Unlike his previous command, which consisted of 16 B-25s, initial plans for the Twelfth Air Force included two heavy-bombardment groups, two P-38 fighter groups, two British Spitfire groups, one troop-carrier group, one light-bombardment group, and three medium-bombardment groups.¹⁷⁶ He later observed that, “I was a brand new Air Force Commander...so there were a great many things I had to learn, and I endeavored to learn them very rapidly.”¹⁷⁷ Doolittle relied heavily on his staff during these stressful weeks, especially his Director of Staff and Director of Operations -- two young colonels named Hoyt S. Vandenberg and Lauris Norstad. Doolittle later recalled that a competent leader utilizes his staff as a “two-way street” to direct and receive advice.¹⁷⁸ Indeed, Doolittle commented in a letter to Arnold that, “I have the best staff, the best commands and the smoothest-running

¹⁷² Harold R. Winton, *Corps Commanders of the Bulge: Six American Generals and Victory in the Ardennes* (Lawrence, KS: University Press of Kansas, 2007), 15.

¹⁷³ Winton, *Corps Commanders of the Bulge*, 20.

¹⁷⁴ The Air Corps Tactical School developed Industrial web theory in the 1930s. The theory professed that scientific analysis could identify key points in an adversary’s industrial war-making capacity. Targeting these vital centers would cause a nation’s military effort to collapse. This methodology provided the theoretical basis for the Combined Bomber Offensive. Jeffery G. Barlow, *The Revolt of the Admirals: The Fight for Naval Aviation 1945-1950* (Washington, DC: Government Reprints Press, 2001), 12-13.

¹⁷⁵ Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II, vol. 2, Europe: Torch to Pointblank, August 1942 to December 1943* (1949; new imprint Washington, DC: Office of Air Force History, 1983), 52.

¹⁷⁶ Craven and Cate, *Europe: Torch to Pointblank*, vol. 2, 51.

¹⁷⁷ Interview, Doolittle by Burch, Fogelman, and Tate, 1971, 49.

¹⁷⁸ Interview, Doolittle by Burch, Fogelman, and Tate, 1971, 23.

organization in the Air Force.”¹⁷⁹ The news likely did not surprise Arnold – the air chief had personally selected the Twelfth Air Force’s staff.¹⁸⁰

Based on advice from Doolittle and Spaatz, Eisenhower decided the Twelfth Air Force would be built around a core cadre of aircrews provided from the Eighth Air Force. Indeed, much to Eaker’s dismay, the Twelfth Air Force was built at the cost of valuable combat experience and resources drawn away from the strategic bombing efforts in Europe. Nevertheless, the majority of the Twelfth Air Force’s commands were activated in the United States and shipped to England.¹⁸¹ Consequently, as the Allied force prepared for the invasion of Africa, Doolittle advised Eisenhower on October 4 that his Airmen were inadequately trained to support the attacking forces.¹⁸² Doolittle mitigated this risk by committing his best-trained crews to the invasion effort and subsequently training additional crews in Africa.¹⁸³

Doolittle’s efforts to prepare his newly born air force were complicated by the disorganized command structure under which Torch was planned. Contrary to airpower doctrine, during Torch, allied air forces were organized as two separate air commands. These commands were divided according to nationality, operational roles, and the projected division of ground forces into the American 5th and British 1st Armies.¹⁸⁴ Doolittle’s Twelfth Air Force would support the former, and the Eastern Air Command (EAC) under Air Marshal Sir William Welsh would assist the latter.¹⁸⁵ The EAC possessed definite plans to aid the 1st Army in seizing Algiers after the Torch landings. Although the Twelfth was three times the size of the EAC, the Torch concept of operations provided

¹⁷⁹ J. H. Doolittle to Lieutenant General H. H. Arnold, letter, 21 October 1942, Henry Harley Arnold Papers Box 13, Reel 13, Library of Congress.

¹⁸⁰ Meilinger, *Hoyt S. Vandenberg: The Life of a General*, 29-30.

¹⁸¹ Craven and Cate, *Europe: Torch to Pointblank*, vol. 2, 52.

¹⁸² Craven and Cate, *Europe: Torch to Pointblank*, vol. 2, 58-59.

¹⁸³ Craven and Cate, *Europe: Torch to Pointblank*, vol. 2, 59.

¹⁸⁴ Craven and Cate, *Europe: Torch to Pointblank*, vol. 2, 53-54.

¹⁸⁵ Craven and Cate, *Europe: Torch to Pointblank*, vol. 2, 62.

Doolittle no corresponding guidance, beyond supporting the attack on Bizerte.¹⁸⁶ Ten days prior to Torch, this ambiguity led Spaatz to question “what, when, and where” was the Twelfth to do in Africa after the landing.¹⁸⁷

Although the Torch landings provided the Allies a viable foothold in North Africa, subsequent offensive momentum stagnated over the winter of 1942-43. The inefficient employment of airpower did not help the cause. Indeed, the early operations of Doolittle’s command were plagued by poor communications and inadequate coordination between his units and the ground forces they supported. Furthermore, his command had no organic intelligence capability and relied exclusively on the British for critical information.¹⁸⁸ At the end of 1942, the Twelve Air Force was struggling to maintain its combat strength. Doolittle reported that his entire striking force consisted of 270 aircraft, with a mission-capable rate of only 48 percent.¹⁸⁹ The Twelfth Air Force had failed to achieve air superiority or institute a system to provide effective air support to ground forces.

Despite the slow progress of air efforts in Africa, Ike recognized Doolittle’s potential as a commanding general. As 1942 drew to a close, Doolittle was nominated for promotion to major general. Eisenhower approved and considered the promotion “fully justified and I recommend it to be accomplished at once.”¹⁹⁰ On his efficiency report, Ike ranked Doolittle 6th among 18 air commanders. The evaluation described Doolittle as “impulsive, dashing, keen and energetic. Is gaining essential experience in requirements of position involving high rank and in my

¹⁸⁶ Craven and Cate, *Europe: Torch to Pointblank*, vol. 2, 54.

¹⁸⁷ Craven and Cate, *Europe: Torch to Pointblank*, vol. 2, 54.

¹⁸⁸ Doolittle, Interview by Burch, Fogelman, and Tate, 1971, 49.

¹⁸⁹ Davis, *Carl A. Spaatz and the Air War in Europe* (Washington, DC: Center for Air Force History, 1993), 171.

¹⁹⁰ Quoted in Doolittle and Glines, *I Could Never be so Lucky Again*, 303.

opinion will develop marked in value as an Air Force commander.”¹⁹¹ In other words, Doolittle’s efforts had earned Ike’s confidence, but the young general still had much to learn.

The indecisive air campaign of the 1942-1943 indicated that the Army Air Forces also had much to learn about the organization of airpower. On December 3 Eisenhower appointed his favorite American air general, Carl Spaatz, as Acting Deputy Commander in Chief for Air of the Allied forces in North Africa. Spaatz’s duties were to coordinate air operations between the Twelfth Air Force and the EAC.¹⁹² Spaatz’s experience as a seasoned general provided the new command a much-needed level of administrative expertise.¹⁹³ A lack of command authority, however, limited his. Deliberations during the Casablanca conference restructured the Allied command organization. The Allied commanders consolidated all the air forces in the Mediterranean theater under one commander. The Allied leaders agreed that Eisenhower’s deputy, Air Chief Marshal Arthur Tedder, would command all air assets in the theater as head of the Mediterranean Air Command.¹⁹⁴ Furthermore, a single Airman under Tedder would command all aircraft in the Northwest African campaign. These changes did not, however, occur overnight. Between January 5 and February 18, 1943, the Allied command hierarchy underwent several restructurings. The first attempt placed Spaatz in command of both the Twelfth and the EAC as Commander of the Allied Air Force.¹⁹⁵ On January 30, the Allied Support Command was added to Spaatz’s organization.¹⁹⁶ On February 18 this arrangement was abandoned, and Spaatz emerged as commander of the newly formed

¹⁹¹ Efficiency Report dated 4 January 1943, Doolittle Military Personal File, National Archives, 08 Efficiency Records.pdf, 61.

¹⁹² Davis, *Carl A. Spaatz*, 143.

¹⁹³ Davis, *Carl A. Spaatz*, 185.

¹⁹⁴ Doolittle and Glines, *I Could Never be so Lucky Again*, 313.

¹⁹⁵ James Doolittle to Joe Doolittle, letter, 4 April 1943, Doolittle Papers, Series IX, Box 64, Folder 23, McDermott Library.

¹⁹⁶ Davis, *Carl A. Spaatz*, 179.

Northwest African Air Forces (NAAF).¹⁹⁷ This structure rendered the Twelfth an air force in “name only.”¹⁹⁸ With his beloved Twelfth effectively gone, Doolittle was reassigned as the commander of the Northwest African Strategic Air Force under Spaatz.

Doolittle considered the reassignment a demotion and began to doubt his future as an air commander. On February 5, 1943, he sent two letters to Joe: one hand-written and one typed. In the former, he referred to the latter as a “short report of my downfall.”¹⁹⁹ The typed letter explained that he was “losing the major part of my command” but that he felt “no resentment over the change only a very keen disappointment that I have failed my gang.” He blamed his failure on a lack of political awareness and noted, “Now I at least appreciate the power of politics, realize that it must be moulded in one’s favor and understand that in some instances, nothing can be done about it by the individual involved.”²⁰⁰ Interestingly, the hand-written note said, “I think Lowell [Thomas] will want to see the letter as its contents will have an effect on his book.”²⁰¹ Lowell Thomas was his biographer. Doolittle was apparently already concerned that his performance in North Africa would detract from his legacy.

Disappointed in the limited reach of his new duties, Doolittle resorted to his skills as a pilot to inspire his men. Between February 9 and 17, he flew six combat missions with the groups under his command.²⁰² These missions accounted for over a quarter of the combat

¹⁹⁷ Doolittle and Glines, *I Could Never be so Lucky Again*, 312.

¹⁹⁸ The Twelfth Air Force remained an administrative headquarters for the U.S. Army units of the NAAF. Spaatz assumed command of the Twelfth AF on March 1 and it was reactivated as a fighting command later in 1943. Craven and Cate, *Europe: Torch to Pointblank*, vol. 2, 167.

¹⁹⁹ James Doolittle to Joe Doolittle, written letter, 5 February 1943, Doolittle Papers, Series IX, Box 64, Folder 23, McDermott Library.

²⁰⁰ James Doolittle to Joe Doolittle, written letter, 5 February 1943, Doolittle Papers, Series IX, Box 64, Folder 23, McDermott Library.

²⁰¹ James Doolittle to Joe Doolittle, typed letter, 5 February 1943, Doolittle Papers, Series IX, Box 64, Folder 23, McDermott Library.

²⁰² Logbook Entries, February 1943, Doolittle Papers, Series XVI, Box 1, McDermott Library.

sorties he flew during the entire war.²⁰³ Doolittle would often show up unannounced to serve as a copilot.²⁰⁴ He also insisted on flying every aircraft in his command. These feats of personal bravery inspired his men and helped maintain the morale of his units during the harsh battles of 1943.

Doolittle gradually learned the art of higher-echelon command, and his superiors recognized his progress. Despite its name, the Northwest African Strategic Air Forces did not conduct a strategic bombardment campaign. Instead, it interdicted the Axis flow of logistics and supplies.²⁰⁵ As 1943 progressed, Doolittle's forces slowly gained air superiority in northern Africa and conducted a moderately successful interdiction campaign against German supply lines. Doolittle's confidence began to grow. On April 4 he wrote Joe, "I've let both him [Arnold] and Gen Marshall, who had confidence in me, down here but we are doing better now and am going to vindicate their confidence in me yet."²⁰⁶ The following day, the Strategic Air Forces conducted a successful raid that claimed forty-eight enemy kills in the air and one hundred aircraft destroyed on the ground.²⁰⁷ On April 6, Doolittle was awarded the Silver Star for the mission's success.²⁰⁸ On June 13, Spaatz sent Doolittle a letter commending his command's role in obtaining the surrender of the islands of Pantelleria and Lampedusa.²⁰⁹ In Doolittle's efficiency report of July 26, 1943, Spaatz commented that he was "competent, industrious, ambitious, and an outstanding leader of

²⁰³ Including the raid on Tokyo, Doolittle flew twenty-two combat missions in World War II. Logbook Entries, 1942-1945, Doolittle Papers, Series XVI, Box 1, McDermott Library.

²⁰⁴ Doolittle and Glines, *I Could Never be so Lucky Again*, 306.

²⁰⁵ Richard G. Davis, "Take Down That Damned Sign!" *Airpower History*, 40 no. 4, (Winter 1993), 18.

²⁰⁶ James Doolittle to Joe Doolittle, letter, 4 April 1943, Doolittle Papers, Series IX, Box 64, Folder 23, McDermott Library.

²⁰⁷ Record of Award of Decoration, 6 April 1943, Doolittle Military Personal File, National Archives, 07 Awards, Decorations, and Commendations.pdf, 24.

²⁰⁸ Record of Award of Decoration, 6 April 1943, Doolittle Military Personal File, National Archives, 07 Awards, Decorations, and Commendations.pdf, 24.

²⁰⁹ Carl Spaatz to James Doolittle, letter, 13 June 1943, Doolittle Military Personal File, National Archives, 07 Awards, Decorations, and Commendations.pdf, 25.

fighting men.”²¹⁰ On August 6, 1943, Eisenhower awarded Doolittle the Distinguished Service Medal.²¹¹ In a personal letter that accompanied the award Ike noted, “you have shown the greatest degree of improvement of any of the senior United States officers in my command.”²¹² Arnold also recognized the performance and expressed further confidence in Doolittle by selecting him to command the newly formed Fifteenth Air Force.

The Fifteenth Air Force was activated on November 1, 1943, in the Lycée Carnot in Tunis, Tunisia.²¹³ Its mission was to conduct strategic bombing against southern Germany. With B-17s based near Foggia, Italy, the Fifteenth would attack German targets beyond the reach of the Eighth Air Force in England. The force collected for this mission consisted of 11 combat groups and over 20,000 men.²¹⁴ As the commander of yet another new air force, Doolittle’s first order of business was to deploy his forces to Italy. This proved to be no small task. Italian airfields were not designed to support four-engine bombers, and efforts to ready the fields were hindered by poor weather. Thus, the transfer of bombers was not complete until the end of December.²¹⁵

As Doolittle’s forces arrived in place, he received word that his command in the Mediterranean would be brief. During a November meeting in Cairo, President Roosevelt and Prime Minister Churchill agreed that Eisenhower would become the supreme commander of the Allied Expeditionary Forces on January 1, 1944. Tedder would continue to serve as his deputy and follow him to Europe. Ike selected Spaatz to

²¹⁰ Efficiency Report, 26 July 1943, Doolittle Military Personal File, National Archives, 08 Efficiency Records.pdf, 62.

²¹¹ General Orders No. 73, 6 August 1943, Doolittle Military Personal File, National Archives, 07 Awards, Decorations, and Commendations.pdf, 29.

²¹² Dwight D. Eisenhower to Major General James H. Doolittle, letter, 1 September 1944, Doolittle Papers, Box 16 Special Correspondence, Library of Congress.

²¹³ Craven and Cate, *Europe: Torch to Pointblank*, vol. 2, 567.

²¹⁴ Richard G. Davis, “Take Down That Damned Sign!” *Airpower History*, 40 no. 4, (Winter 1993), 18.

²¹⁵ Craven and Cate, *Europe: Torch to Pointblank*, vol. 2, 568.

command the newly formed U.S. Strategic Air Forces in Europe (USSTAF). This placed him in command of the Eighth and Fifteenth Air Forces. Spaatz recommended that Doolittle replace Eaker as the commander of the Eighth Air Force and the latter be moved to Italy to take the position vacated by Tedder – command of the Mediterranean Allied Air Forces. Spaatz considered his proposal a promotion for Eaker and believed his diplomatic skills and command experience would serve him well in the position.²¹⁶ Arnold, however, had additional motives for reassigning Eaker. The Chief had become dissatisfied with what he saw as poor progress of the Eighth Air Force’s strategic bombing efforts in the fall of 1943.²¹⁷ Allied forces had failed to achieve air superiority over Europe, and the Eighth Air Force’s attrition rate remained alarmingly high. Arnold believed that fresh faces in the Eighth would bring new ideas with which to fight the Luftwaffe.²¹⁸ The December reorganization provided Arnold an opportunity to infuse new blood into the Mighty Eighth without casting a shadow over himself, Eaker, or the Army Air Forces’ efforts in Europe.²¹⁹ Thus, on December 18 Arnold notified Eaker of his new assignment by official cable. Eaker considered the reassignment a firing. Though artfully disguised, it was.²²⁰ Eaker begged for Arnold to reconsider, but Arnold was adamant. The move shattered a friendship of twenty-five years.²²¹ Interestingly, the Official Air Force history commented that, “If Arnold’s dissatisfaction over the rate of Eighth Air Force operations entered into the decision, the record apparently has left no evidence of it.”²²² Whatever the evidence of

²¹⁶ Davis, *Carl A. Spaatz*, 278.

²¹⁷ Arnold, *Global Mission*, 218-219.

²¹⁸ DeWitt S. Copp, *Forged in Fire: Strategy and Decisions in the Air War Over Europe, 1940-45* (Garden City, N.Y.: Doubleday, 1983), 407.

²¹⁹ Davis, *Carl A. Spaatz*, 279.

²²⁰ Robert J. Mrazek, *To Kingdom Come: an Epic Saga of Survival in the Air War Over Germany* (New York: NAL Hardcover, 2011), 242.

²²¹ Davis, *Carl A. Spaatz*, 279.

²²² Craven and Cate, *Europe: Torch to Pointblank*, vol. 2, 750.

Arnold's true motives, Doolittle became the new commander of the Eighth Air Force effective January 6, 1944.

Conclusion

Reflecting on Doolittle's life up to January 1944 offers several insights regarding his potential as a senior leader. Doolittle's technical skills and moral courage had provided him success throughout his aviation career. His established reputation as a skilled, daring pilot presented him opportunities to expand the limits of aviation. Doolittle's methodical approach to these challenges mitigated the risks and enhanced his opportunities for success. These trends were exemplified in his transcontinental records and multiple air-race victories.

Although he left active duty in 1930, Doolittle continued to affect aviation as a civilian-airman. His dissenting voice as a member of the Baker Board demonstrated his ardent air power beliefs and penchant for public advocacy. Moreover, he exhibited apt leadership skill by marshalling support across industry and government to realize his vision for 100-octane aviation fuel.

When he reentered the service, Doolittle led the audacious attack on Tokyo through a combination of technical expertise, moral courage, and sound personal leadership. The success of the Doolittle Raid, however, thrust him into leadership roles for which he was much less well equipped – high command. Administrative deficiencies in his early command demonstrated Doolittle's lack of staff experience and professional military education. In North Africa Doolittle eventually overcame his shortcomings with prudent reliance on his skillful staff and an aptitude to learn from his mistakes. Because his forces were still relatively small, he was also able to exploit his strengths of charisma and personal leadership to strengthen his command. Also, despite early missteps, Allied forces overwhelmed the German resistance and achieved air superiority. The war in Europe, however, would be a different story –

the Mighty Eighth Air Force was a massive air armada. Doolittle would not be able to rely as heavily on the skills that brought him success as he had previously. As 1944 began, the operative question remained, “would Doolittle’s ability to learn offset his lack of experience in high command?” In other words, could Doolittle continue his tradition of effectiveness, innovation, and leadership at the operational level of war?

To answer these questions, one must eschew the common anecdotes of Doolittle’s performance as the Eighth Air Force commander and evaluate his ability to use his forces effectively in the Combined Bomber Offensive.



Chapter 2

Operational Effectiveness

Doolittle assumed command of the Eighth Air Force on January 6, 1944.¹ As the AAF's most prestigious air force, the Eighth dwarfed his previous commands.² With a massive complement of 211,222 Airmen, it was over five times the size of the Fifteenth Air Force.³ The Eighth Air Force consisted of over 4,200 combat aircraft organized into 25¾ heavy-bomber groups, four medium-bomber groups, 13 fighter groups, two troop-carrier groups and a reconnaissance group.⁴ Doolittle also had to cope with the rapid expansion of his forces. During 1944 the Eighth's bomber forces grew by 50 percent. By December Doolittle commanded 39 heavy bomber groups and 15 fighter groups.⁵

The new Eighth Air Force commander clearly understood the magnitude of the task before him. On January 14 he wrote to Joe noting, "This command was a great compliment and indicated confidence on the part of Hap [Arnold] and Tooe [Spaatz].... It is the biggest, most difficult, and most interesting job I've ever had."⁶ Six days later he confided, "It's a *big* job. Big, at least measured by my standards and capabilities."⁷ He expressed similar feelings in a letter to his friend from North Africa, Lieutenant General George Patton. Doolittle confided: "I

¹ History, Headquarters Eighth Air Force, 1-31 January 1944, vol. 1, AFHRC call no. 520.01 V.1, 1.

² Richard G. Davis, "Take Down That Damned Sign!" *Airpower History*, 40 no. 4, (Winter 1993), 18

³ Memo to Chief of Staff, "Administrative highlights," n.d., Doolittle Papers, Box 16, 1944-45 Military Correspondence, Library of Congress. The Fifteenth Air Force had 4,873 officers and 32,867 enlisted men in December 1943. Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II*, vol. 2, *Europe: Torch to Pointblank, August 1942 to December 1943* (1949; new imprint Washington, DC: Office of Air Force History, 1983), 571.

⁴ Craven and Cate, *Europe: Torch to Pointblank*, vol. 2, 639.

⁵ Memo to Chief of Staff, "Administrative highlights," (no date), Doolittle Papers, Box 16, 1944-45 Military Correspondence, Library of Congress.

⁶ James Doolittle to Joe Doolittle, letter, 14 January 1944, Doolittle Papers, Series IX, Box 64, Folder 23, Special Collections Division, McDermott Library, University of Texas at Dallas.

⁷ Emphasis in original. James Doolittle to Joe Doolittle, letter, 14 January 1944, Doolittle Papers, Series IX, Box 64, Folder 23, McDermott Library.

have a bigger and more interesting job, but at the same time it is infinitely more difficult than the one I had down below. Down there the problem was to make something out of nothing. Up here it requires an equal or greater amount of ingenuity to effectively utilize the almost unlimited resources at one's disposal. Down there, where you were not 'under the guns', any modest success was apparently appreciated. Up here miracles are confidently anticipated. Have been a little slow in getting my Miracle Department organized but hope for the best."⁸

Clausewitz would not have been surprised by Doolittle's apprehension. The Prussian theorist observed, "Conscious of the need to be decisive, [commanders] also recognize the risks entailed by a *wrong* decision; since they are unfamiliar with the problems now facing them, their mind loses its former incisiveness."⁹ In other words, as officers rise in rank, Clausewitz believed their effectiveness frequently diminished because the burden of increased responsibility often dampens their boldness. Doolittle recognized this phenomenon in his own son, James H. Doolittle, Jr., who was experiencing strain as a flight leader. In a December 26, 1944 letter to Joe he wrote:

[Jim] looks fine but the responsibility of being a Flight Leader has been bothering him some. It's a bit hard for a kid to take on responsibility all at once. In peacetime one assumes obligations gradually. In war time our mistakes mean the loss of some of our buddies and it's a bit hard for some of these kids to have responsibility forced on them before they feel that they have the knowledge and experience necessary to enable them to safely assume it. Told Jimmer that he was one stop from the bottom and that I was only a couple from the top and that one's obligations and responsibilities grew with each command echelon. The results of a mistake on his part affected about six planes and 36 crew members. From now on it would get tougher. That

⁸ Major General James H. Doolittle to Lt. Gen. George S. Patton, letter dated 1 February 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

⁹ Emphasis in original. Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret. (Princeton: Princeton University Press, 1989), 164.

was merely one of the prices we pay for competence – more is expected of us. And so on into the night.¹⁰

The considerably increased scope of leading the Eighth Air Force suggests that Doolittle would face unfamiliar problems. How well did Doolittle cope with his expanded responsibilities? This chapter assesses one significant component of that question: Doolittle's operational effectiveness. How effective were Doolittle's efforts to achieve the air superiority required for the Allied invasion of Normandy? Moreover, did he make the most efficient use of his aircrew? As the war progressed, how competent was Doolittle in managing the effectiveness of Eighth Air Force's bombing in close proximity to friendly ground forces? Assessing how Doolittle coped with these challenges provides insight into his performance as a numbered air force commander.

Air Superiority over Western Europe

When Doolittle assumed command, the Eighth Air Force's primary mission was to gain air superiority over western Europe. At the Tehran Conference of 1943, Allied leaders had agreed that Overlord, the invasion of northern France, would occur in 1944. Arnold understood that a prerequisite for this operation was air superiority over the Normandy lodgment area. Thus, on Christmas Day 1943, Arnold sent Doolittle a personal letter stating: "Therefore, my personal message to you – this is a MUST – is to destroy the enemy air force wherever you find them, in the air, on the ground and in the factories."¹¹ Doolittle's immediate superior, Carl Spaatz, reinforced this order with an Operational Directive dated January 11, 1944 instructing the Eighth Air Force to attack the Luftwaffe "in the air and on the ground."¹²

¹⁰ James Doolittle to Joe Doolittle, letter, 23 December 1944, Doolittle Papers, Series IX, Box 64, Folder 23, McDermott Library.

¹¹ Quoted in Dik Alan Daso, *Doolittle: Aerospace Visionary* (Washington, DC: Brassey's, Inc., 2003), 80-81.

¹² Quoted in Davis, *Carl A. Spaatz and the Air War in Europe* (Washington, DC: Center for Air Force History, 1993), 300.

Arnold had high expectations for his Eighth Air Force commanders. Success of the AAF's largest air command had broad implications for future prospects of an independent air force. Because strategic bombing was the *raison d'être* of a separate air force, failure of the Mighty Eighth would jeopardize Arnold's goal of service independence. When Eaker failed to produce results, Arnold replaced him. Arnold revealed his ruthlessness in a letter to Marshall. As D-Day approached, he argued, "[we should] scrutinize in cold blood our leaders...and remove or insist upon removing each one concerning whom we have the slightest doubt."¹³ Doolittle had little room for error.

Unlike his predecessor, however, Doolittle benefited from having Arnold's highest priority for resources. In 1943 Eaker had competed with the Mediterranean campaign for materiel. Thus, he could marshal only several hundred bombers for strikes against Germany.¹⁴ For example, on the October 14 raid against Schweinfurt, Eaker launched 320 heavy bombers and 196 limited-range P-47s as escorts.¹⁵ These shortages led Arthur Ferguson, an official Air Force historian, to conclude, "Through most of 1943 the Eighth Air Force did not have enough strength, either in bombers or...in long-range escort to do the job assigned to it."¹⁶ Doolittle, in contrast, dispatched a force of over 660 heavy bombers within a week of taking command.¹⁷ Moreover, Doolittle's bombers benefited from the protection of 592 fighter escorts, including long-range P-38s from the 20th and 55th Fighter Groups.¹⁸

¹³ Arnold to Marshall, no date, Arnold Papers, 1944 Correspondence, Library of Congress.

¹⁴ General James H. Doolittle and Carroll V. Glines, *I Could Never Be So Lucky Again* (New York: Bantam Books, 1992), 347.

¹⁵ Roger A. Freeman *Mighty Eighth War Diary* (New York: Jane's, 1981), 126. Davis, *Carl A. Spaatz*, 362.

¹⁶ Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II*, vol. 3, *Europe: Argument to VE Day, January 1944 to May 1945* (1949; new imprint, Washington, DC: Office of Air Force History, 1983), 65-66.

¹⁷ History, Headquarters Eighth Air Force, 1-31 January 1944, vol. 1, AFHRC call no. 520.01 V.1, 16.

¹⁸ History, Headquarters Eighth Air Force, 1-31 January 1944, vol. 1, AFHRC, call no. 520.01 V.1 16; Kent D. Miller, *Fighter Units & Pilots of The 8th Air Force: September 1942- May 1945. Vol. 1.* (Atglen, PA: Schiffer Military History, 2001), 38.

The Eighth's expanding resources provided Doolittle confidence. On January 19, he wrote to his subordinate commanders, "Our constantly increasing force, the increasing range of our fighter planes, and our new and improved technical equipment, if *properly employed*, will permit us to hit the desired targets in Germany and still substantially reduce our percentage losses in spite of the frantic efforts of the Hun fighters to stop us."¹⁹ Arnold provided Doolittle the resources needed to accomplish his assigned mission. A question, however, remained – could Doolittle employ them effectively?

Doolittle believed that striking German industry was the most efficacious means of accomplishing his mission. These attacks not only decreased the enemy's production capacity, but also forced the Luftwaffe to present battle. By compelling the Luftwaffe to resist its bomber/fighter formations, the Eighth could overwhelm and defeat the German air arm. Doolittle summarized his concept by declaring that the Eighth Air Force's mission was "to drop the greatest number of bombs with the highest possible precision on the most vital enemy targets while suffering the minimum losses, and to destroy the Hun in the air."²⁰ In other words, Doolittle employed unrelenting offensive action to engage the Luftwaffe in a fierce air war of attrition.

The new, aggressive approach represented a significant departure from the Eighth's previous method of operations. Eaker had adopted a policy of group rotation to preserve his modest force from the adverse effects of attrition warfare.²¹ This practice, Eaker believed, provided sufficient rest for aircrews and reduced the risk of losing an unsustainable number of bombers on a single mission. Doolittle's

¹⁹ Emphasis added. Doolittle to VIII Fighter Command and Bomber Divisions, letter, 19 January 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

²⁰ Minutes, Commanders' Meeting, 21 January 1944, AFHRC call no. 520.01 V.2, 2.

²¹ Geoffrey Perret, *Winged Victory: The Army Air Forces in World War II* (New York: Random House, 1993), 280.

concept of “maximum effort” overturned this mentality.²² When favorable weather conditions allowed, Doolittle demanded that the Eighth muster all its forces. During his first commanders’ meeting, Doolittle declared, “on days when full operation is possible, it is desired to hit the enemy with every airplane at our disposal.”²³ When weather was less favorable, the Eighth maintained pressure on the enemy by launching smaller raids to attack through cloud layers. To implement his operational concept, Doolittle abolished the practice of group rotation and declared that non-operational periods due to poor weather were sufficient for recuperation.²⁴ Doolittle managed his resources by distinguishing between “maximum effort” and “maximum continuous effort.”²⁵ The former applied to “critical” operations, defined by “a requirement for participation by every operational aircraft for which a competent crew can be supplied.”²⁶ Moreover, all available P-51 pilots would support these missions with long-range fighter escorts; and if necessary, airplanes would be borrowed from the Ninth Air Force. Missions of “a non-critical nature” would be supported by “maximum continuous effort.” These attacks would employ approximately 40 percent of the available force.²⁷

Doolittle understood that he did not have much time to implement this approach. Eisenhower ordered that 60 days prior to the planned invasion of Normandy, the Eighth would devote its full attention to supporting Overlord.²⁸ Doolittle, therefore, estimated that he had until April 1 to bring the Luftwaffe to battle with a concentrated strategic-bombing campaign. Accordingly, during an February 8 commanders’

²² Minutes, Commanders’ Meeting, 21 January 1944, AFHRC, 2.

²³ Minutes, Commanders’ Meeting, 21 January 1944, AFHRC, 2.

²⁴ Minutes, Commanders’ Meeting, 21 January 1944, AFHRC, 2.

²⁵ Minutes, Commanders’ Meeting, 8 February 1944, AFHRC call no. 520.01 V.2, 1.

²⁶ Minutes, Commanders’ Meeting, 8 February 1944, AFHRC, 1-2.

²⁷ Minutes, Commanders’ Meeting, 8 February 1944, AFHRC, 1.

²⁸ Davis, *Carl A. Spaatz*, 306.

meeting, he impressed upon his subordinates the “need for urgent attention” to the strategic bombing mission.²⁹ Doolittle emphasized the point in a subsequent letter to his division commanders: “The Air Force is now approaching the most critical phase of the war with Germany. During the next few months it is mandatory that we secure complete air superiority over the German Air Force in this Theater. In order to accomplish this end in the time allotted, we must adopt every expedient to improve the effectiveness of the Air Force and to keep it at a high level of operational efficiency.”³⁰

The closing days of February gave Doolittle the opportunity to employ offensive action to its full potential. On February 19 Allied meteorologists forecast an extended period of favorable weather over Europe beginning the following day.³¹ Spaatz, therefore, ordered the Eighth and Fifteenth Air Forces to conduct a massive, coordinated attack on the German aircraft industry.³² Doolittle initiated the so-called “Big Week” on February 20 by marshaling all available resources to inflict a maximum-effort attack against Germany. The mission included over 1,000 heavy bombers, which struck aircraft production plants in 11 German cities.³³ Over the ensuing six days, the Eighth flew continuous missions against the Luftwaffe, pausing operations only on the 23rd because of poor weather.³⁴ During Big Week, 3894 Eighth Air Force bombers dropped a total of 8340.5 tons of ordnance on the German aircraft industry.³⁵ The week’s missions also claimed 466 enemy kills.³⁶

²⁹ Minutes, Commanders’ Meeting, 8 February 1944, AFHRC, 1.

³⁰ Doolittle to VIII Fighter Command and all Bombardment Divisions, letter, 17 February 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

³¹ Davis, *Carl A. Spaatz*, 319.

³² Haywood S. Hansell, Jr., *The Air Plan That Defeated Hitler* (Atlanta, GA: Higgins-McArthur/Longino & Porter, Inc., 1972), 181.

³³ History, Headquarters Eighth Air Force, 1-29 February 1944, vol. 1, AFHRC call no. 520.01 V.1, 43-44.

³⁴ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 38.

³⁵ History, Headquarters Eighth Air Force, 1-29 February 1944, vol. 1, AFHRC, 3.

³⁶ History, Headquarters Eighth Air Force, 1-29 February 1944, vol. 1, AFHRC, 3; Interestingly, the RAF, which flew at night, only destroyed 13 enemy aircraft during Big Week. Davis, *Carl A. Spaatz*, 326.

In six days, Doolittle had nearly equaled the bomb tonnage expended by the Eighth Air Force in its first 10 months of operation.³⁷ These powerful strikes noticeably hampered the German war machine. The air raids damaged or destroyed 75 percent of the buildings that produced 90 percent of Germany's aircraft.³⁸ In response, Nazi officials ordered the dispersal of the aircraft industry, which appreciably reduced its efficiency. Although German aircraft production eventually recovered from the bombings, Big Week delayed fighter production at a critical moment in the air war.³⁹

The results of Big Week pleased Arnold. On February 26, he sent a congratulatory cable to Spaatz declaring that the USSTAF's "Heavy Bomber units have opened and are carrying on the greatest air offensive in history."⁴⁰ He informed Spaatz that he believed the air offensive was approaching its climax and requested the following message be relayed to the Eighth:

With a relentless determination that demands the respect of everyone in the Army Air Forces you are driving home an attack which is destroying the very vitals of Germany. The strongest defenses that a desperate enemy can devise are not stopping you. Your losses have been heavy. Enemy losses have been far heavier. Your attacks on Regensburg, Leipzig, Gotha, Bernberg, and other vital fighter factories are wiping out German fighter production and laying the foundation for final and decisive operations in the future. I commend all ranks in your Command from top to bottom for the super job you are doing. I wish you all the best luck in continuing to carry this destruction through the heart of Germany.⁴¹

In March Doolittle maintained pressure on the Luftwaffe with continued strikes against the German economy. On March 4 he sent a

³⁷ The Eighth dropped 8,494 tons of ordnance between August 1, 1942 and May 31, 1943. *Army Air Forces Statistical Digest: World War II* (Washington, DC: Office of Statistical Control, 1945), 243, Table 143.

³⁸ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 44.

³⁹ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 45.

⁴⁰ Arnold to Spaatz, cable, 26 February 1944, Spaatz Papers, I-13, February 1944, Library of Congress.

⁴¹ Arnold to Spaatz, cable, 26 February 1944, Spaatz Papers, I-13, February 1944, Library of Congress.

force of 502 heavy bombers to conduct the first American bombing of Berlin.⁴² The intent of this mission was not simply to attack the capital, but also to compel the Luftwaffe to resist.⁴³ He followed the initial strike against Berlin with subsequent large-scale raids on March 6 and 8.⁴⁴ To enhance the likelihood of contact with the enemy, Doolittle ordered his forces to eschew deception tactics and fly directly to their targets.⁴⁵ He explained his rationale to his commanders as follows: “it is now a case of either the Hun will fold or we will fold.”⁴⁶ Doolittle maintained the high operational tempo as summer approached. In May, the Eighth dropped over 38,000 tons; and it nearly doubled that amount in June, employing nearly 60,000 tons of ordnance in support of the Allied invasion.⁴⁷

Doolittle’s operational methods were not without cost. During the first quarter of 1944, the bomber groups endured significant losses. The Eighth Air Force lost 158 heavy bombers during the six days of Big Week alone.⁴⁸ The total losses in February constituted nearly 20 percent of Doolittle’s available force. The following months were not much better. In March the Eighth lost 23.3 percent of its bomber force, and in April the Luftwaffe destroyed almost a quarter of the Eighth’s heavy bombers.⁴⁹ These heavy losses compelled Doolittle to notify Arnold that, “the replacement rate of both airplanes and crews will have to be increased to insure that this Air Force may maintain its effective strength level.”⁵⁰

⁴² History, Headquarters Eighth Air Force, 1-31 March 1944, AFHRC call no. 520.01 V.1, 33-34.

⁴³ Davis, *Carl A. Spaatz*, 416.

⁴⁴ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 51-53.

⁴⁵ Davis, *Carl A. Spaatz*, 416.

⁴⁶ Minutes, Commanders’ Meeting, 22 March 1944, History, Headquarters Eighth Air Force, 1-31 March 1944, vol. 2, AFAHA 520.01 V.2, 2.

⁴⁷ *Army Air Forces Statistical Digest: World War II*, 243, Table 143.

⁴⁸ History, Headquarters Eighth Air Force, 1-29 February 1944, AFHRC, 43-44.

⁴⁹ Williamson Murray, *Strategy for Defeat: The Luftwaffe 1933-1945* (Maxwell AFB, AL: Air University Press, 1983), 235, Table L.

⁵⁰ Doolittle to Arnold, letter, 4 March 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

The results obtained from Doolittle's offensive justified these costs because the expanding supply of materiel from the Zone of the Interior offset the combat attrition. Although Doolittle's lost 345 heavy bombers in March, the Eighth suffered only a 3.3 percent decrease in its sortie rate.⁵¹ In contrast, the resource-constrained Luftwaffe could not sustain the bloody air battle of attrition. In the first two months of 1944, the Allied forces killed or disabled nearly a third of the German Air Force's fighter pilots.⁵² Moreover, by the beginning of March, the Luftwaffe's fighter losses exceeded 50 percent.⁵³ These figures led historian Arthur Ferguson to claim, "It was the result of battles, especially during those of the Big Week, that the GAF was for the first time forced to admit defeat," and "by April 1, 1944 the GAF was a defeated force."⁵⁴

Doolittle clearly achieved the goal of air superiority for Overlord. While preparing for the Normandy invasion, Allied intelligence officers anticipated that the attacking forces would face resistance from 1,100-1,250 German aircraft.⁵⁵ On June 6, 1944 the Luftwaffe mustered fewer than 200 sorties, and the Allies established the beachhead under complete air superiority.⁵⁶ This domination of the sky enabled Eisenhower to tell his invasion forces "if you see fighting aircraft over you, they will be ours."⁵⁷ The lack of air resistance also permitted Doolittle to observe the Normandy landings from a P-38 without concern for enemy aircraft. During the previous five months, the Eighth Air Force's onslaught forced the German fighters to present battle in the air.

⁵¹ *Army Air Forces Statistical Digest: World War II*, 255, Table 159; Murray, *Strategy for Defeat*, 345, Appendix 4. See also Davis, *Carl A. Spaatz*, 377.

⁵² Murray, *Strategy for Defeat*, 240, Table L.

⁵³ Murray, *Strategy for Defeat*, 239, Table LII.

⁵⁴ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 63, 66.

⁵⁵ F. H. Hinsley with E. E. Thomas, C. A. G. Simkins, and C. F. G. Ransom, *British Intelligence in the Second World War: Its Influence on Strategy and Operations*, Vol 23, Part 2 (New York: Cambridge University Press, 1988), 104.

⁵⁶ Thomas Alexander Hughes, *Over Lord: General Pete Quesada and the Triumph of Tactical Air Power in World War II* (New York: The Free Press, 1995), 4.

⁵⁷ Quoted in Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 58.

British Air Chief Marshals Arthur Tedder and Trafford Leigh-Mallory agreed that the Eighth's daylight raids had compelled the Germans to prioritize their assets to the defense of the Reich, thus conceding the skies over western France.⁵⁸ The demise of the German fighter force marked a turning point in the war.⁵⁹ The official Air Force history concluded, "The defeat was brought about by attrition of the German fighter forces in the air and on the ground, by the consequent deterioration in quality of the German fighter pilots, and by attacks on German aircraft production."⁶⁰ Thus, by June 6, 1944 Doolittle had accomplished the mission assigned by Arnold – emasculation of the Luftwaffe.

Effective use of Aircrews

Doolittle's increased operational tempo placed a significant strain on all of the Eighth Air Force's people, but particularly those who flew. In early 1944, the Eighth did not receive enough replacement aircrew to offset combat losses. In March mounting losses decreased the average number of crews assigned to B-24 groups from 66 to 62 and the number of crews in B-17 groups from 64 to 57.⁶¹ Although the Eighth Air Force possessed 1415 operational heavy bombers in April, crew shortages reduced its effective strength to 1066.⁶² By July the number of assigned personnel in the Eighth Air Force decreased from over 211,000 to 199,461.⁶³ Thus, to implement his concept of maximum effort, Doolittle had to increase the effectiveness of his assigned personnel.

⁵⁸ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 166.

⁵⁹ Davis, *Carl A. Spaatz*, 414.

⁶⁰ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 58-59

⁶¹ Doolittle to Arnold, letter, 4 March 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

⁶² Anderson to Spaatz, letter, 3 April 1944, Spaatz's Papers, box I-90, Library of Congress.

⁶³ Memo to Chief of Staff, "Administrative highlights," (no date), Doolittle Papers, Box 16, 1944-45 Military Correspondence, Library of Congress. This assertion counters Richard Davis' claim that by May of 1944 the strength of the Eighth Air Force exceeded 400,000. Davis, *Carl A. Spaatz*, 380 and Davis, "Take Down That Damned Sign!" 18. The error is likely due to a misreading of Craven and Cate, *Europe: Torch to Pointblank*, vol. 2, 640, which ambiguously states: "During the next six months the AAF in ETO [European Theater of Operations] would more than double in size, and by May 1944 it would have over

Early in his command, Doolittle recognized the need to modify the Eighth's policies regarding aircrew rotation. When he took over, it was standard practice to return a bomber crew to the Zone of the Interior following completion of a 25-mission combat tour. As sortie rates increased, however, aircrews began finishing tours in as few as eight weeks. Because training a bomber crew required four months, Doolittle considered the rotation policy unsustainable.⁶⁴ Moreover, bomber crews, in his opinion, did not achieve an "acceptable level of skill" until completing 10 missions, and reached the "peak of their efficiency" around 20 missions.⁶⁵ Doolittle's instincts were accurate. Statistically, a crew's first 10 missions were the most dangerous, while the final five sorties posed the least risk.⁶⁶

Therefore, on January 30 Doolittle instituted his first modification to the Eighth's crew-rotation policy. Henceforth, crews that completed an operational tour did not automatically return to the Zone of the Interior. Instead, they could be assigned to command or staff positions.⁶⁷ Doolittle dispatched a letter to his division commanders explaining his reasoning: (1) the Zone of the Interior had completed its expansion program and no longer required experienced personnel to form new units; (2) operations in support of Overlord required an average of two missions per day for each assigned aircraft, which rendered the 25-mission limit impractical; (3) the introduction of long-range fighter escorts reduced bomber losses and, accordingly, increased the number of crews completing their combat tours; and (4) extending combat tours

400,000 troops." This statement does not reflect the Eighth Air Force alone, but instead, indicates the combined strength of all numbered air forces in Europe.

⁶⁴ Doolittle to VIII Fighter Command and all Bombardment Divisions, letter, 17 February 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

⁶⁵ Doolittle and Glines, *I Could Never be so Lucky Again*, 359.

⁶⁶ Mark K. Wells, *Courage and Air Warfare: The Allied Aircrew Experience in the Second World War* (Essex, England: Routledge, 1995), 46.

⁶⁷ Davis, *Carl A. Spaatz*, 380. Minutes, Commanders' Meeting, 8 February 1944, AFHRC, 4.

would increase the average experience of aircrews, which, in turn, would enhance the effectiveness of the force.⁶⁸

Doolittle's amendment of crew-rotation practices anticipated a similar change in policy that Arnold directed for the entire AAF. In a letter of February 11, Arnold informed Doolittle about a service-wide shortage of qualified aircrew. The shortfall had several causes. First, the AAF possessed more aircraft than originally planned. This fortunate development permitted Arnold to enlarge operational squadrons with more aircraft, which, in turn, required additional aircrews. More importantly, however, Arnold noted that air force commanders were prematurely returning qualified aircrews to the United States after an arbitrary number of missions. Arnold's directive is worth citing at length:

If you have made any policies or understandings that combat personnel will be returned to the United States after fulfilling such arbitrary conditions as I have just described, those policies will be rescinded at once. Our combat personnel must understand that we plan to use combat crews in accord with war demands. Policies covering relief for combat crews must be an overall Army Air Force [sic] matter, based in all war zones upon the importance of our operating and human considerations. Such relief has to be a flexible proposition, for our leaders to determine, based on the time, and place, and means available, and the conditions of the individual himself, and above all on the waging and winning of the war.

You, as an Air Force Commander, must always have the authority to relieve your combat crews on any basis you may see fit *to the extent that replacements and means are available to you*. But a sharp distinction must be drawn between this privately held consideration of a commander for his men and the existence of announced inflexible policies which in effect become a irretractable [sic] pledge from the commander to his men that jeopardizes his bringing his full

⁶⁸ Doolittle to VIII Fighter Command and all Bombardment Divisions, letter, 17 February 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

available strength against the enemy when and where he has the vital need to do so.⁶⁹

Arnold's guidance became an important topic for discussion in the Eighth Air Force commanders' meeting of March 2. Doolittle's deputy commander, Brigadier General Earle "Pat" Partridge, read the letter aloud to the group, spurring a heated discourse. Doolittle settled on a policy that required bomber crews to fly 30 sorties and fighter pilots to accumulate 200 hours before they would be eligible for reassignment.⁷⁰ Doolittle articulated the policy change in a March 4 letter to his commanders. He informed the leaders that Eighth Air Force Memorandum 75-1, dated October 1943, would be revised to reflect the new tour requirements, effective March 15, 1944.⁷¹ To ease the shock of the change, Doolittle established a method for crediting sorties on a sliding scale for crews that completed 15 or more sorties.⁷² For instance, crews having flown 23 missions were credited with 28 sorties under the new policy.⁷³ The same day Doolittle penned a letter to Arnold explaining his rationale. Doolittle stated that he agreed with the Chief's assessment of the situation: "The policies which were in effect in this Air Force with respect to the relief of combat crew personnel from combat duty were sound at the time of their inauguration, but under current conditions, are now recognized as needing revision and we were endeavoring to arrive at a solution which would permit an extension in the length of the combat tour without adversely affecting the present high morale of the personnel involved."⁷⁴ He further noted that instead of automatically

⁶⁹ Emphasis in original. Arnold to Doolittle, letter, 11 February 1944, Spaatz Papers, File I-90, Library of Congress.

⁷⁰ Minutes, Commanders' Meeting, 2 March 1944, AFHRC call no. 520.01 V.1, 3.

⁷¹ Doolittle to VIII Fighter Command and all Bombardment Divisions, letter, 4 March 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

⁷² History, Headquarters Eighth Air Force, 1-30 April 1944, vol. 1, AFHRC call no. 520.01 V.1, 5, 3.

⁷³ Doolittle to VIII Fighter Command and all Bombardment Divisions, letter, 4 March 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

⁷⁴ Doolittle to Arnold, letter, 4 March 1944, Doolittle Papers, Box 19, 1944 Operational Records Library of Congress.

transferring to the Zone of the Interior, combat crews would merely “be *eligible* for relief” after completing an operational tour.⁷⁵ Doolittle indicated that crews would be offered a reprieve from combat operations only to “provide time for suitable rest and recuperation.”⁷⁶ Following the end of the R&R, he considered crews to again be eligible for a combat assignment.⁷⁷

During the spring of 1944, operational requirements compelled Doolittle to demand even more from his aircrews. In April he increased the number of assigned aircrew to each bomber group to 96. This level of manning provided the Eighth the desired 2:1 crew-to-aircraft-ratio.⁷⁸ A shortage of personnel, however, continued to plague the Eighth Air Force.⁷⁹ Consequently, Doolittle announced that he was considering further extending the length of the combat tour.⁸⁰ Resistance from his commanders persuaded Doolittle to delay the extension.⁸¹ Nevertheless, by July Doolittle ordered that to earn credit for an operational tour, Eighth Air Force bomber crews would have to complete 35 missions and fighter pilots would have to log 300 hours.⁸²

Doolittle’s commanders had good reason to oppose extending the length of operational tours: it degraded morale. When Doolittle first extended the operational tour, his commanders reported that the change “had produced some depreciation in morale.”⁸³ The considerable losses stemming from Doolittle’s concept of maximum effort also contributed to a degradation of the Eighth’s morale. This concerned Doolittle and he

⁷⁵ Emphasis in original. Doolittle to Arnold, letter, 4 March 1944, Doolittle Papers, Box 19, 1944 Operational Records Library of Congress.

⁷⁶ Doolittle to Arnold, letter, 4 March 1944, Doolittle Papers, Box 19, 1944 Operational Records Library of Congress.

⁷⁷ Doolittle to Arnold, letter, 4 March 1944, Doolittle Papers, Box 19, 1944 Operational Records Library of Congress.

⁷⁸ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 306

⁷⁹ History, Headquarters Eighth Air Force, 1-31 May 1944, vol. 1, AFHRC call no. 520.01 V.1, 4.

⁸⁰ Minutes, Commanders’ Meeting, 6 April 1944, AFHRC call no. 520.01 V.2, 2.

⁸¹ Minutes, Commanders’ Meeting, 6 April 1944, AFHRC, 2.

⁸² History, Headquarters Eighth Air Force, 1-31 July 1944, vol.1, AFHRC call no. 520.01 V.1, 3.

⁸³ History, Headquarters Eighth Air Force, 1-31 March 1944, AFHRC, vol. 1.

therefore devoted considerable time and effort to mitigating the problem of lagging morale. Chapter 4 closely examines the steps he took to do so. It is sufficient to note here that in order to increase the effectiveness of his available aircrew, Doolittle had to balance the demands of the mission and his superiors with the strength of his Airmen's military spirit.

Doolittle, therefore, instituted a "lead crew" program to improve morale and increase operational effectiveness. He directed bomb group commanders to nominate eight exceptional aircrews as "lead crews." These elite crews wore special combat patches with gold borders, which distinguished them from their peers.⁸⁴ During combat missions, the crews led the group's bomber formations.⁸⁵ To offset the increased danger associated with these duties, Doolittle reduced the tour length for lead crews from 35 to 30.⁸⁶ Upon the completion of a tour, the crews were entitled to a 30-day period of rest and recuperation (R&R) in the United States. After this leave, however, Doolittle expected the crews to resume their places in the Eighth as lead crews and instructors.⁸⁷

In July 1944 Arnold articulated a new service-wide policy regarding the relief of aircrews from combat. The policy stipulated that aircrews would be relieved from combat duty only "after positive evidence of combat fatigue."⁸⁸ Doolittle observed Arnold's directive by mandating that flight surgeons evaluate crews for combat fatigue after crews had completed 35 missions, and fighter pilots accrued 300 hours.⁸⁹ By doing so, he artfully complied with Arnold's directive but kept faith with his Airmen by not having to revoke the Eighth Air Force's policy.

⁸⁴ History, Headquarters Eighth Air Force, 1-31 July 1944, vol. 1, AFHRC, 6

⁸⁵ History, Headquarters Eighth Air Force, 1-31 July 1944, vol. 1, AFHRC, 6

⁸⁶ Luftwaffe fighters frequently targeted lead aircraft in an attempt to disrupt bomber formations. History, Headquarters Eighth Air Force, 1-31 July 1944, AFHRC, 2

⁸⁷ History, Headquarters Eighth Air Force, 1-31 July 1944, AFHRC, 2

⁸⁸ History, Headquarters Eighth Air Force, 1-31 July 1944, AFHRC, 3

⁸⁹ History, Headquarters Eighth Air Force, 1-31 July 1944, AFHRC, 3

By the summer of 1944 loss rates declined, and the number of replacement crews increased sufficiently to resume the practice of sending crews to permanent assignments in the Zone of the Interior after they completed a combat tour.⁹⁰ In June and July the Eighth lost 280 and 324 heavy bombers respectively.⁹¹ The losses, though substantial, were compensated by the growing supply of men and materiel from the Zone of the Interior. During the July 20 commanders' meeting, Brigadier General John Samford, Doolittle's chief of staff, noted that in order to maintain the 96 authorized assigned crews per group, the Eighth had to send a large number of crews home to "offset the replacements coming in."⁹² By autumn supply of aircrews had further increased, and Doolittle delegated the authority to relieve crews to his division commanders. The only guidance he provided was that the aircrews had to fly between 25 and 35 sorties before reassignment.⁹³

The subsequent results of Doolittle's increase in combat-tour lengths are indefinite. Doolittle claimed that the policy increased the Eighth's survival rate and bombing accuracy.⁹⁴ The Eighth's bombing accuracy did improve from 29 percent of bombs hitting within 1000 feet of the designated target to 40 percent in June and 45 percent by the end of the summer.⁹⁵ Although this study cannot establish a causal link between these results and an increase in combat-tour duration, it is clear that Doolittle's decision led to an increase of average crew experience in the Eighth. Despite a resultant decrease in morale, Doolittle persevered in his decision. This was in no doubt aided by Arnold's insistence on eliminating arbitrary numbers of missions as criteria for relief from combat. But Doolittle also took positive steps to

⁹⁰ Minutes, Commanders' Meeting, 20 July 1944, AFHRC call no. 520.01 V.2, 3.

⁹¹ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 303.

⁹² Minutes, Commanders' Meeting, 20 July 1944, AFHRC, 3.

⁹³ Minutes, Commanders' Meeting, 23 September 1944, AFHRC call no. 520.01 V.1.

⁹⁴ Doolittle and Glines, *I Could Never be so Lucky Again*, 360

⁹⁵ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 305.

ameliorate Arnold's more draconian measures. In short, Doolittle balanced the demands of the mission, the directives of his superiors, and the capabilities and welfare of his aircrew.

Close Air Support

Following the invasion of Normandy, Allied ground forces became embroiled in a brutal fight with the Wehrmacht. The prolific hedgerows of northern France provided the Germans excellent defensive positions, and fierce enemy resistance stalled Allied efforts to expand the lodgment area. Allied leaders searched for ways to break the stalemate in Normandy. Directing the power of the Eighth Air Force's strategic bombers against the German defenses seemed logical and prudent. Realizing the great power resident in the Strategic Air Force, First Army Commander Lt Gen Omar N. Bradley sought an opportunity to "first smash a [German] division from the air, and then tramp right through it."⁹⁶

Thus, in the summer of 1944, Doolittle encountered the problem of having to employ his strategic bombers to attack targets in direct support of ground forces, a role for which crews were neither equipped nor trained. Doolittle remarked in his autobiography that in July 1944, "bombing in close support of ground troops was not the mission of the Eighth and my men were not trained for it. They were trained for high altitude bombing; close air support of ground troops was not a feasible mission for the Eighth."⁹⁷ Moreover, the USSTAF's system of command and control was not structured to cope with the dynamic conditions that accompany the mission of close air support. As Richard Davis has noted: "This foray into large-scale close air support presented unique and unanticipated command, control, and technical problems to the Eighth Air Force...as they sought to fulfill obligations for which they lacked

⁹⁶ Omar N. Bradley, *A Soldier's Story* (New York, Rand McNally and Company, 1951), 339.

⁹⁷ Doolittle and Glines, *I Could Never Be So Lucky*, 375.

methods and training.”⁹⁸ Thus, it is appropriate to ask, was the Eighth Air Force under Doolittle effective in providing close air support to friendly ground forces? To assess this matter properly, this study addresses a single measure of effectiveness that was at least partially within Doolittle’s control: the risk to friendly ground troops from the Eighth’s air bombardment of enemy forces.

The battle around Caen provided the war’s first opportunity to use heavy bombers in close support of ground forces. Stout German armored resistance held Canadian and British forces at bay in the area surrounding the French town. On July 8 aircraft from both RAF Bomber Command and Quesada’s IX Bomber Command pummeled the northern portion of the city and enemy troop positions south of the town.⁹⁹ Although the Allied forces gained control of a significant portion of the city and the air assault did not cause any friendly casualties, the bombing did not appreciably degrade the German resistance.¹⁰⁰ Therefore, the plan for Operation Goodwood, an attempt to break out from Caen, required additional air support. Field Marshal Bernard Montgomery requested the striking power of the Eighth Air Force.

The Eighth’s first close air-support mission, did not, however, meet Montgomery’s expectations. On July 18 Doolittle dispatched between 570 and 644 B-24s from the 2nd Bombardment Division to drop 1,410 tons of ordnance in an effort to clear the way for the attacking forces.¹⁰¹ But most of the B-24s missed their targets, and a majority of the bombs were scattered across the countryside. Consequently, Allied forces faced

⁹⁸ Davis, *Carl A. Spaatz*, 453.

⁹⁹ Davis, *Carl A. Spaatz*, 460 and Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 207-208.

¹⁰⁰ Solly Zuckerman, *From Apes to Warlords* (New York: Harper and Row, 1978), 275-276 and Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 208.

¹⁰¹ There is some discrepancy in the sources regarding the number of bombers that participated in the mission. The Eighth Air Force Headquarters narrative history reports that 644 B-24s were dispatched. In contrast Davis and Craven and Cate claim that only 570 flew. History, Headquarters Eighth Air Force, 1-31 July 1944, AFHRC, 64. Davis, *Carl A. Spaatz*, 462. Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 208.

determined resistance from the enemy residing in the Eighth's target area. In contrast, the Eighth's British cousin, RAF Bomber Command, had considerable success at Caen. The British strikes proved accurate and effective, destroying an entire *Panzer* company.¹⁰²

The Eighth had much to learn from Bomber Command's success. The British had implemented the tactic of using a "master bomber" to control airborne operations. The designated aircraft would loiter over the target for the entire operation to provide timely adjustments to the striking bombers. The Eighth did not adopt these methods for the next close-air-support mission. Nor was close support of ground troops a topic of discussion during the July 20 commanders' meeting.¹⁰³ A series of unfortunate events, however, soon brought the issue vividly to Doolittle's attention.

Airpower was a vital component of Bradley's plan for breaking out from the Normandy beachhead. In an operation codenamed Cobra, Bradley concentrated four divisions against a single German armored division. He selected the point of attack in large part due to the presence of a conspicuous road connecting St. Lô and Périers that would serve as the demarcation line between the Americans and the Germans. He also envisioned an air attack being made parallel to the enemy lines that would decimate the German resistance defending a one-by-five-mile rectangle immediately in front of his forces.¹⁰⁴ To increase the concentration of the bombing efforts, Bradley wanted the attacks to occur within the span of one hour. The long, straight St. Lô-Périers road, Bradley reasoned, would distinguish between the friendly and enemy positions. He thus considered 800 yards of separation sufficient distance between friendly troops and the heavy bomber's target.¹⁰⁵

¹⁰² Davis, *Carl A. Spaatz*, 462.

¹⁰³ Minutes, Commanders' Meeting, 20 July 1944, AFHRC.

¹⁰⁴ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 232.

¹⁰⁵ Davis, *Carl A. Spaatz*, 463-465.

Significant misunderstandings developed during the process of transforming Bradley's concept into an operational plan. Because the mission was in support of ground forces, the commander of the Allied Expeditionary Air Force, Air Chief Marshal Trafford Leigh-Mallory, led the air operation. Bradley briefed the ground scheme of maneuver for Operation Cobra to Leigh-Mallory and other air commanders on July 19, just days before the planned assault.¹⁰⁶ Leigh-Mallory had little experience planning operations with heavy bombers. Thus, many problems with Bradley's plan were not properly addressed during the discussion. For example, citing the dispersion of bombs from high-altitude bombing, Airmen called for a 3,000-yard safe separation distance, but Bradley consented to only 1,200 yards.¹⁰⁷ Moreover, Brigadier General Orvil Anderson, Doolittle's operations officer, argued that the parallel attack was not feasible. Leigh-Mallory dismissed the objection, and Bradley left the meeting convinced that the aerial attack would occur parallel to friendly lines.¹⁰⁸ Unlike Anderson, Leigh-Mallory was unaware of the physical impossibility of channeling 1,500 aircraft through the short side of the target area in the 60 minutes required.¹⁰⁹ Furthermore, flying parallel to the German lines gave Doolittle's bombers longer exposure to German flak than would flying perpendicular thereto.

The first mission to support Operation Cobra did not go well. To meet the demand for concentrated fire, Eighth Air Force planners, unaware of Bradley's expectation of a parallel attack, designed the mission with a flight path perpendicular to the battle lines. The perpendicular plan was never communicated to Bradley. Leigh-Mallory, apparently also unaware of the perpendicular attack plan, scheduled the

¹⁰⁶ The operation was originally scheduled for 21 July and postponed until 24 July because of weather. Davis, *Carl A. Spaatz*, 465, 469.

¹⁰⁷ Martin Blumenson, *United States Army in World War II: Breakout and Pursuit* (Washington, DC: Government Printing Office, 1961), 221.

¹⁰⁸ Davis, *Carl A. Spaatz*, 467-68.

¹⁰⁹ Davis, *Carl A. Spaatz*, 471.

initial assault for noon on July 24, despite a poor weather forecast. Clouds in the target area completely obscured the target area, leading Leigh-Mallory to cancel the mission. But he did not do so until just before the planned attack, a common practice with tactical operations. This decision created much confusion among the Eighth's heavy-bomber formations. Because ground forces had no direct radio contact with the attacking bombers, the cancelation message had to be relayed through Eighth Air Force Headquarters in England. Thus, when Doolittle received Leigh-Mallory's cancelation order, his bombers were only seven minutes from the target area; they could not be recalled.¹¹⁰ Of the 1,586 bombers dispatched that day, 343 found breaks in the weather and attacked their targets.¹¹¹ Compounding the misunderstanding about parallel-versus-perpendicular attack, a lead bomber inadvertently released a portion of its bomb load over friendly lines. Following the cue of their lead aircraft, the 15 accompanying bombers released their weapons in unison. In another incident, a B-17 accidentally bombed a Ninth Air Force airfield at Chippelle.¹¹² These mishaps killed 16 soldiers and injured 64.¹¹³

The Eighth Air Force's performance did not please Bradley. He did not understand why the formations had not conformed to his request to attack parallel to the battle lines. He exasperatedly remarked the perpendicular attack "represented a serious breach of good faith in planning...I left Stanmore with the understanding that air would follow the Périers road."¹¹⁴ Nor was Eisenhower impressed with the Eighth's performance. He said pointedly, "I don't believe [heavy bombers] can be

¹¹⁰ Davis, *Carl A. Spaatz*, 469-470.

¹¹¹ History, Headquarters Eighth Air Force, 1-31 July 1944, vol. 1, AFHRC, 70.

¹¹² Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 230.

¹¹³ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 230 There is some disagreement regarding the number of soldiers killed Davis contends that 25 soldiers were killed and 131 wounded. Davis, *Carl A. Spaatz*, 470.

¹¹⁴ Bradley, *A Soldier's Story*, 347.

used in support of ground forces. That's a job for artillery. I gave them a green light this time. But I promise you it's the last."¹¹⁵ Interestingly, amidst the flurry of activity during Operation Cobra, Ike took time on 26 July to add a hand-written annotation to Doolittle's June 30 efficiency report. Spaatz, who made the evaluation, rated Doolittle as 2nd of 10 of lieutenant generals. Eisenhower disagreed. He penned, "in my opinion General Doolittle ranks in the middle third of lieutenant generals."¹¹⁶

A favorable forecast for July 25 provided the Eighth another opportunity to support Operation Cobra. During the mission planning, Doolittle's headquarters explained to Bradley that a parallel attack would require two-and-a-half hours instead of the one he requested. Bradley thus "decided to accept the additional risk of perpendicular to the road bombing."¹¹⁷ With the previous day's fratricide in mind, Doolittle took precautions to minimize the potential for premature weapons releases. Two hours prior to the mission, a reconnaissance aircraft flew over the assault area to ascertain weather conditions and make recommendations to the Eighth Air Force aircrews. The visual attacks were planned for the lowest feasible altitude, while still reducing the risk of flak. Artillery also fired red smoke shells at two-minute intervals to mark the target boundaries.¹¹⁸ Finally, Doolittle planned to observe the mission first-hand from the cockpit of a P-38.¹¹⁹

Despite Doolittle's precautions, confusion again prevailed on July 25. A total of 1,490 heavy bombers struck the enemy lines around St. Lô, dropping more than 3,300 tons of ordnance.¹²⁰ After a majority of the force had been launched, a cloud base rolled in over the target at the

¹¹⁵ Quoted in Davis, *Carl A. Spaatz*, 474.

¹¹⁶ Efficiency report dated 30 June 1944, National Archives and Records Administration, Official Military Personal File of James H. Doolittle, 08 Efficiency Records.pdf.

¹¹⁷ Entry for July 24, 1944, Vandenberg Papers, Diary, Box 1, Library of Congress. Quoted in Davis, *Carl A. Spaatz*, 471.

¹¹⁸ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 232.

¹¹⁹ Logbook Entry 25 July 1944, Doolittle Papers, Series XVI, Box 1, McDermott Library.

¹²⁰ Freeman, *Mighty Eighth War Diary*, 303.

planned delivery altitude of 15,000-16,000 feet. This contingency compelled bombardiers to recalculate their bombing solutions and adjust their sights. The lowering of the attack altitude also loosened bomber formations, which led to scattered bombing patterns. Moreover, the artillery smoke rounds proved ineffective in marking the target area. A southerly wind dispersed the markings among the surrounding smoke and haze that billowed up from the battlefield.¹²¹ Finally, the St. Lô-Périers road Bradley had picked as a visual marker, so prominent on the map, was much less obvious from the air.¹²²

Given the challenging conditions, the bombing of enemy forces at St. Lô was surprisingly accurate but still caused friendly losses. As an official Air Force historian Robert George remarked: “Technically viewed, the bombing was good.”¹²³ Analysis of the bombing by the Operational Research Section concluded that bombing errors were better than expected, given the mission circumstances.¹²⁴ Only two-to-four percent of over 1,500 bombers missed their targets. The errors that did occur, however, were costly. Amid the chaos, 35 heavy bombers from the Eighth dropped their ordnance over American lines. The stray bombs killed 102 friendly soldiers and wounded 380.¹²⁵ An investigation attributed the short bombs to “a misunderstanding of briefing instructions” and “a misinterpretation of target markers”—personal errors.¹²⁶ Among the dead was Lt. Gen. Lesley J. McNair. His fate was tinged with irony. McNair had been a vocal critic of the AAF’s lack of training for close air support.¹²⁷ The following day Doolittle flew a P-38

¹²¹ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 233.

¹²² Years later Quesada criticized himself for not inspecting the road himself prior to the attack. Davis, *Carl A. Spaatz*, 474-475.

¹²³ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 233.

¹²⁴ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 233.

¹²⁵ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 234.

¹²⁶ History, Headquarters Eighth Air Force, 1-31 July 1944, AFHRC, 71; Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 234.

¹²⁷ Davis, *Carl A. Spaatz*, 474.

to offer Bradley his personal condolences.¹²⁸ Doolittle clearly understood that “technically good” was not good enough for close air support.

Doolittle responded to the problems of fratricide by directing his staff to investigate methods of reducing friendly casualties. Familiar with the British operations, Doolittle apparently told his subordinates to seek advice from their RAF counterparts. Colonel Benjamin Kelsey, commander of the Eighth Air Force’s Operational Engineering Section, submitted a memorandum to Doolittle on July 30 addressing the issue.¹²⁹ His report made several recommendations: (1) establishing the aiming point with path-finding aircraft using radar, not visual, targeting devices; (2) using friendly antiaircraft artillery to fire colored bursts to denote the bomb line; (3) including a RAF-developed target indicator (T.I.) bomb, which burst at 4,000 feet and burned for five minutes, in each aircraft’s bomb load to maintain a “continual carpet of markers” in the target area; (4) using portable navigational instruments to indicate friendly troop locations; and (5) establishing an “airborne liaison director” to maintain radio contact with the ground forces and the attacking bomber formations.¹³⁰ The following day another memorandum titled “Marking of Target Area in Support of Ground Forces” was submitted to Doolittle’s operations officer, Brigadier General Orvil Anderson. Similar in many respects to Kelsey’s suggestions, the report recommended the use of portable navigational aids, searchlights and ground panels on friendly locations, T.I. bombs, and improved radio communications between ground and air forces.¹³¹ The latter memorandum concluded with suggestions submitted by the 2nd and 3rd Bombardment Divisions. Both units believed that having additional time to attack the target area

¹²⁸ Logbook Entry, 26 July 1944, Doolittle Papers, Series XVI, Box 1, McDermott Library.

¹²⁹ The Operational Engineering Section was a section of Doolittle’s staff devoted to investigating, testing, and implementing technical modifications to aircraft. It is discussed in more detail in Chapter 3.

¹³⁰ Kelsey to Doolittle, letter, 30 July 1944, Doolittle Papers, Box 19, Library of Congress.

¹³¹ Conroy to Anderson, letter, 31 July 1944, Doolittle Papers, Box 19, Library of Congress.

would improve bombing accuracy and stated a preference for attacks being made perpendicular to the battle lines.¹³²

These recommendations reflected the Eighth Air Force's coordination with the RAF. Kelsey closed his report by recommending the pathfinder aircraft be used as a "master bomber" to maintain awareness of the target marking and direct adjustments in the operations.¹³³ Similarly, the report submitted to Anderson proposed using RAF Mosquito aircraft to mark targets for American heavy bombers.¹³⁴

Meanwhile, the passage of time and the successful breakout from Normandy brought about by Operation Cobra eased Bradley's displeasure. On July 28 Bradley told Eisenhower, "This operation could not have been the success it has been without such close cooperation of the Air. In the first place the bombardment we gave them last Tuesday was apparently highly successful, even though we did suffer many casualties ourselves."¹³⁵ Eisenhower echoed Bradley's sentiments in a letter of August 2 to Doolittle. He wrote:

I know how badly you and your command have felt because of the accidental bombing of some of our own troops.... Naturally, all of us have shared your acute distress that this should have happened. Nevertheless, it is quite important that you do not give the incident an exaggerated place either in your mind or in your future planning.

All the reports show that the great mass of the bombs from your tremendous force fell squarely on the assigned target, and I want you and your command to know that the advantages resulting from the bombardment were of inestimable value. I am perfectly certain, also, that when the ground forces again have to call on you for help you not only be ready as ever to cooperate, but will in the meantime have worked out some method so as to eliminate unfortunate

¹³² Conroy to Anderson, letter, 31 July 1944, Doolittle Papers, Box 19, Library of Congress.

¹³³ Kelsey to Doolittle, letter, 30 July 1944, Doolittle Papers, Box 19, Library of Congress.

¹³⁴ Conroy to Anderson, letter, 31 July 1944, Doolittle Papers, Box 19, Library of Congress.

¹³⁵ Quoted in Davis, *Carl A. Spaatz*, 479.

results from the occasional gross error on the part of a single pilot or a single group.¹³⁶

Doolittle's response to Eisenhower's consolatory remarks summarized his plan to mitigate the risk of losses to friendly troops. He opened his letter of August 5 with a first-hand account of the incident and the results of his formal investigation. Doolittle followed with his proposals for the conduct of future bomber operations in support of ground forces. He advised Ike that in such operations, his forces would properly mark the target area with T.I. bombs. He also emphasized the importance of friendly marking devices such as colored antiaircraft artillery rounds, ground panels, and navigational beacons. A senior air commander, Doolittle noted, would control future missions and maintain contact with ground forces. Finally, Doolittle insisted on the use of air liaison officers to assist in the planning of future ground-support operations. He closed his letter by asserting "we are anxious to vindicate ourselves with a perfect job next time."¹³⁷ Perfection, however, would have to wait.

Unbeknown to Doolittle, the same day he penned his response to Eisenhower, Spaatz committed the Eighth's heavy bombers to support Montgomery's 1st Canadian Army south of Caen as part of Operation Totalize.¹³⁸ Doolittle ensured his planners took great care during the short time available to prepare for the operation. Scouting planes were used to reconnoiter the area and report on weather conditions. Despite the increased exposure to enemy antiaircraft artillery and the difficulties of managing the congested airspace, Doolittle ordered the bombers to fly parallel to the enemy lines to mitigate the risk of short bombs.¹³⁹ Much to his dismay, the ground troops were positioned only 1,500 yards from

¹³⁶ Eisenhower to Doolittle, letter, 2 August 1944, Doolittle Papers, Box 18, Library of Congress.

¹³⁷ Doolittle to Eisenhower, letter, 5 August 1944, Doolittle Papers, Box 18, Special Correspondence, Library of Congress.

¹³⁸ History, Headquarters Eighth Air Force, 1-30 August 1944, vol. 1 38.

¹³⁹ Doolittle to Spaatz, letter, 10 August 1944, Doolittle Papers, Box 18, Library of Congress.

the target.¹⁴⁰ Doolittle and his deputy, Partridge, also flew fighter aircraft from which to control the operation personally.¹⁴¹ Doolittle had his P-51 modified to include a special radio with which to communicate with the bombing division commanders. The radio, however, failed during the flight, and Doolittle found himself again a helpless observer.¹⁴²

The Eighth Air Force's efforts to support ground forces again produced friendly casualties. Doolittle launched 497 heavy bombers that dropped 764.8 tons of general-purpose bombs and 723 tons of fragmentation ordnance against enemy troop positions.¹⁴³ The loads of three groups fell wide of the intended target. Doolittle commissioned a special investigation to determine the causes of the errant bombs. The August 15 report concluded that in the first instance, flak struck the lead aircraft, setting it aflame. When the pilot jettisoned his ordnance, the accompanying aircraft dropped their bombs as well. In another incident, a lead bombardier misidentified a smoke column over friendly lines as the target. The final incident was attributed to improper crew selection. The group commander had assigned an inexperienced lead crew that subsequently misidentified the target area.¹⁴⁴ Although some of the reasons for the error proved difficult to prevent, the mishaps killed 25 Canadians and wounded 131.¹⁴⁵

Doolittle's frustration with the planning of ground-support operations was palpable in an August 10 memorandum he sent to Spaatz titled "Direct Support of Ground Troops by the Eighth Air Force."¹⁴⁶ In the three-page report, Doolittle explained that the Eighth's support of the

¹⁴⁰ Davis, *Carl A. Spaatz*, 480.

¹⁴¹ Doolittle flew a P-51 and Partridge a P-47 and presumably remained over friendly lines. Logbook Entry, 8 August 1944, Doolittle Papers, McDermott Library. Gen Earle Partridge, Interview by Tom Strum and Hugh N. Ahmann, 23-25 April 1974, USAF Oral History Collection, AFHRC call no. K239.0512-729 C.1, 407-408.

¹⁴² Doolittle and Glines, *I Could Never Be So Lucky Again*, 378.

¹⁴³ History, Headquarters Eighth Air Force, 1-30 August 1944, vol. 1, AFHRC call no. 520.01 V.1, 38-39.

¹⁴⁴ History, Headquarters Eighth Air Force, 1-30 August 1944, vol. 1, AFHRC, 38-39.

¹⁴⁵ Freeman, *Mighty Eighth War Diary*, 319.

¹⁴⁶ Doolittle to Spaatz, letter, 10 August 1944, Doolittle Papers, Box 18, Library of Congress.

D-Day invasion produced no fratricide because he was provided ample time to prepare his forces. In contrast, the subsequent missions were “done with insufficient time for preparation.”¹⁴⁷ He also outlined the reasons for the mishaps and his plan to improve results through improved training in close air support. Doolittle acknowledged that the training would decrease his command’s efficiency in strategic bombing but said the risk “must be accepted.”¹⁴⁸ Before closing, he noted “if we are to do as good a job as the ground troops do in our support of them, we have to know what is to be done as soon as they do and must have our people in the planning from start to finish.”¹⁴⁹

Operation Queen, conducted in November, gave Doolittle an opportunity to realize his full vision for ground-support operations. On October 21, Spaatz met with Bradley to discuss an attack plan to cross the Roer River. Success of the operation would provide a base from which to launch an assault over the Rhine into Germany. Unlike the previous operations, Doolittle had time to prepare his forces for the operation. Close-air-support operations were discussed at length during the November 1 commanders’ meeting.¹⁵⁰ Moreover, on November 7 he dispatched 535 heavy bombers and 148 fighters on a “special practice mission” against a target in England to rehearse the techniques.¹⁵¹ During the operation, 64 antiaircraft artillery pieces deployed colored shells to denote the bomb line. Friendly troops also marked their location with large ground-marking panels and a string of barrage balloons.¹⁵² Truck-mounted navigational beacons were also placed along friendly lines. Finally, the safety margin from bombing aim points to

¹⁴⁷ Doolittle to Spaatz, letter, 10 August 1944, Doolittle Papers, Box 18, Library of Congress.

¹⁴⁸ Doolittle to Spaatz, letter, 10 August 1944, Doolittle Papers, Box 18, Library of Congress.

¹⁴⁹ Doolittle to Spaatz, letter, 10 August 1944, Doolittle Papers, Box 18, Library of Congress.

¹⁵⁰ Minutes, Commanders’ Meeting, 1 November 1944, AFHRC call no. 520.01 V.2, 2.

¹⁵¹ History, Headquarters Eighth Air Force, 1-30 November 1944, vol. 1, AFHRC call no. 520.01 V.1, 74.

¹⁵² Charles B. MacDonald, *United States Army in World War II, The European Theater of Operations: The Siegfried Line Campaign* (Washington, DC: Government Printing Office, 1963), 405.

friendly troops was expanded to 3,600 yards, over twice the distance used in St. Lô.¹⁵³

Doolittle's extensive efforts to mitigate friendly losses finally paid dividends. The mission in support of Operation Queen was the largest air-ground coordinated assault of the war. On November 16, 1,204 heavy bombers dropped 4,120 tons of ordnance on enemy positions.¹⁵⁴ Clouds, smoke, haze, and even snow again hindered the visual release of bombs over the battlefield. The aircrews coped well, however, and friendly casualties were limited to a one soldier killed and three wounded. Moreover, the destruction rendered by the aerial onslaught was vast. Several fortified villages and enemy positions were completely destroyed.¹⁵⁵ Richard Davis aptly noted: "In its preparations and execution Queen showed how far the Eighth Air Force had come in its ground support role."¹⁵⁶

Doolittle's use of heavy bombers in direct support of ground troops illuminates his effectiveness as a commander. Following the first incident of fratricide, he became personally involved in the efforts to mitigate the dangers to ground personnel. He directed his staff to formulate solutions and placed himself in a position to witness the follow-on operations at first-hand. He also exhibited a certain measure of humility by compelling his subordinates to seek the advice of their British counterparts. Moreover, he understood the opportunity cost of training his forces for close air support instead of strategic bombing. Although Doolittle was unable to implement his plans to prevent friendly losses on August 8, his solutions ultimately proved effective in the successful support of Operation Queen. In summary, despite repeated

¹⁵³ Davis, *Carl A. Spaatz*, 516.

¹⁵⁴ Freeman, *Mighty Eighth War Diary*, 382.

¹⁵⁵ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 632.

¹⁵⁶ Davis, *Carl A. Spaatz*, 515.

frustration, Doolittle successfully implemented institutional change that allowed his strategic-bombing force to support ground forces safely.

Conclusion

Several observations emerge from assessing Doolittle's use of the Eighth Air Force's resources. First, Doolittle's concept of attrition through maximum effort indicates a predisposition to aggressive action. This mentality resembles a Clausewitzian approach to force employment. The German theorist shunned the practice of maintaining a strategic reserve, contending that a strategic-level commander should commit all available resources to winning a decisive battle.¹⁵⁷ Similarly, Doolittle felt the spring of 1944 offered a decisive opportunity for winning the air war over western Europe. Indeed, his determined attacks transformed the character of Eighth Air Force operations, much to Arnold's approval. His aggressive approach cost the Eighth dearly in terms of loss of aircraft and crews, but it also forced the enemy to offer battle in the air over Germany. Doolittle's instincts were right; the ensuing struggle of aerial attrition broke the Luftwaffe's back.¹⁵⁸

This aggressiveness led Doolittle to demand maximum effort from his aircrews. He upended the extant policies of tour length in order to obtain the personnel needed to support his increased tempo of operations. Doolittle's instincts were validated by Arnold's demand for evaluation of the way in which qualified aircrews were being employed. The increased tour length, however, combined with mounting losses, led to a significant degradation in unit morale in the spring of 1944. The measures Doolittle took to mitigate these adverse consequences are further addressed in Chapter 4. Suffice to say here, Doolittle pushed his

¹⁵⁷ In Clausewitz's paradigm of perspectives on war, the level of strategy roughly parallels the late twentieth/early twenty-first century's operational level of war. Clausewitz, *On War*, 213.

¹⁵⁸ Donald Caldwell and Richard Muller, *The Luftwaffe Over Germany: Defense of the Reich*, (St. Paul: Greenhill Books, 2007), 186-189.

crews to their limit, while artfully balancing the needs of the mission, the demands of his superiors, and the welfare of his men.

Doolittle also performed admirably when confronted with a mission his forces were ill-equipped to perform. High-altitude bombing in close proximity to friendly ground forces is a complex task, which continues to challenge the technologically advanced air forces of the early twenty-first century. Nevertheless, following the fratricide at St. Lô, Doolittle marshaled his staff to develop procedures to reduce the risks of bombing in close support of ground forces. Although these methods required time to implement, they ultimately proved effective in the air bombardment supporting Operation Queen. Perhaps the most significant aspect of this episode, however, was Doolittle's willingness to accept a non-doctrinal use of airpower to enhance overall force effectiveness. The ACTS instructors would have cringed at using heavy bombers to support ground forces. But the overall effects of Cobra and Queen, despite the fratricide accompanying the former, hastened the end of the Wehrmacht.

This evaluation indicates that, in the areas studied, Doolittle effectively applied available resources to achieve his assigned missions. He grasped the impact of the abundant means at his disposal and forced the Luftwaffe into an air battle of attrition. His demanding nature extracted much from his men and was not without cost in blood and spirit. Nevertheless, Doolittle walked the fine line of pushing his crews hard without overextending their capabilities. Although Doolittle could drive and lead his men to perform, he had less success in avoiding friendly casualties with the use of heavy bombers in close support of ground forces. Nevertheless, the efforts he and his staff took gradually reduced the risks of the mission to acceptable levels. In short, Doolittle's Clausewitzian approach to economy of force achieved what was arguably the "highest profit" by inflicting significant losses upon the Luftwaffe and

ground targets, while simultaneously reducing the losses of his own and other Allied forces.



Chapter 3

Tactical and Technical Innovation

Clausewitz famously observed that although the essence of war is immutable, its character is constantly changing.¹ Furthermore, Sun Tzu stated, “of the five elements, none is always predominate.”² In other words, in war “the only constant is constant change.”³ Innovation enables a commander to adapt to these changes and thus, is an appropriate variable of command performance. Therefore, how effective was Doolittle’s influence on tactical and technical innovation? Did he make any modification of tactics in response to the problem of increased aircraft attrition? Moreover, did Doolittle stimulate effective technical innovation to mitigate the numerous aircraft mechanical problems within his extensive fleet of aircraft? Finally, was Doolittle successful in blending tactical and technical innovation to lessen the effects of poor weather on bombing operations? These questions provide an opportunity to examine Doolittle’s aptitude as a tactical and technical innovator while commanding the Eighth Air Force.

Tactical innovation

Doolittle’s decision to change the tactics of fighter escorts is widely addressed in the literature. In his autobiography, Doolittle describes a scene in which he directed Major General William Kepner to alter the primary mission of VIII fighter command from protecting bombers to destroying German fighters. Hanging in Kepner’s office was a sign that read: “THE FIRST DUTY OF THE EIGHTH AIR FORCE FIGHTERS IS TO BRING THE BOMBERS BACK ALIVE.” Doolittle ordered Kepner to “take

¹ Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret. (Princeton: Princeton University Press, 1989), 88.

² Sun Tzu, *The Illustrated Art of War*, trans. Samuel B. Griffith (New York: Oxford University Press, 2005), 153.

³ Samuel B. Griffith, “An introduction to Sun Tzu,” *The Illustrated Art of War*, 28.

down that dammed sign” and replace it with one that stated “THE FIRST DUTY OF THE EIGHTH AIR FORCE FIGHTERS IS TO DESTROY GERMAN FIGHTERS.”⁴ Although several accounts exist of the dramatic story, they all agree that Doolittle ordered Kepner to remove the sign.⁵

Doolittle, however, was just one of many who believed in using fighters offensively. His subordinate, Kepner, considered fighters offensive weapons that should pursue and destroy enemy aircraft. Although the leader of VIII Fighter Command did not agree with Eaker’s policy, in the fall of 1943 the limited quantity and range of available fighters gave him little choice. He conceded that the escorts had to “stick close to the bombers.”⁶ Doolittle’s superior, Spaatz, also believed in an offensive approach. His Operational Directive of January 11, 1944, ordered the Eighth Air Force to attack German fighters “in the air and on the ground.”⁷ Accordingly, the historian, Richard Davis, attributes equal credit to Spaatz and Doolittle for deciding to use fighters more offensively.⁸ Moreover, Spaatz’s directive echoed the sentiment of his superior, General Arnold. On November 3, 1943, Arnold sent a memorandum to Marshall recommending that Allied air forces “seek out and destroy the German Air Force in the air and on the ground without delay. The defensive concept of our fighter commands and air defense units must be changed to the offensive.”⁹ This view was reiterated in Arnold’s Christmas Day message of 1943. The order “to destroy the

⁴ General James H. Doolittle and Carroll V. Glines, *I Could Never Be So Lucky Again* (New York: Bantam Books, 1992), 352-53.

⁵ Geoffrey Perret, *Winged Victory: The Army Air Forces in World War II* (New York: Random House, 1993), 507 n60, Doolittle and Glines, *I Could Never be so Lucky Again*, 352-53.

Gen Earle Partridge, Interview by Tom Strum and Hugh N. Ahmann, 23-25 April 1974, USAF Oral History Collection, AFHRC call no. K239.0512-729 C.1, 238-239. Lowell Thomas and Edward Jablonski, *Doolittle: a Biography* (Garden City, NY: Doubleday & Company, Inc., 1976), 266-269.

⁶ Quoted in Richard G. Davis, *Carl A. Spaatz and the Air War in Europe* (Washington, DC: Center for Air Force History, 1993), 302.

⁷ Quoted in Davis, *Carl A. Spaatz*, 300.

⁸ Davis, *Carl A. Spaatz*, 299.

⁹ Quoted in Davis, *Carl A. Spaatz*, 300.

enemy air force wherever you find them” left little to Doolittle’s imagination in regards to what was expected.¹⁰

Doolittle also possessed a crucial resource his predecessor lacked – long-range fighters. November 1943 marked the arrival of the P-38 long-range fighter in the European theater, and the following month brought the highly anticipated P-51 Mustang. By March 1944 both these aircraft carried wing tanks, which extended their respective ranges to 585 and 850 miles. Kepner observed that the latter’s remarkable range and performance made it “the only satisfactory answer” to German air defenses.¹¹ Moreover, by February of 1944, the more numerous P-47s also benefited from the use of new external fuel tanks, which increased their range from 375 miles to a respectable 475 miles.¹² The extended ranges of these aircraft not only allowed them to accompany bombers over greater distances, it also allowed more flexibility in their employment.

So how instrumental was Doolittle to the shift in tactics? Did Doolittle play “the decisive” role or did he merely execute the orders of his superiors?

When Doolittle assumed command, the Eighth Air Force faced a serious problem of attrition. Between July and November 1943, the Eighth lost 64 percent of its aircrews.¹³ This trend continued into 1944. In January only 26 percent of bomber crews finished the 25 missions required to return to the United States. Fifty-seven percent ended up dead or missing; and the remaining 17 percent transferred for administrative purposes, succumbed to combat fatigue, or died outside

¹⁰ Quoted in Dik Alan Daso, *Doolittle: Aerospace Visionary* (Washington, DC: Brassey’s, Inc., 2003), 3. Doolittle and Glines, *I Could Never Be So Lucky Again*, 80-81.

¹¹ Quoted in Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II*, vol. 3, *Europe: Argument to VE Day, January 1944 to May 1945* (1949; new imprint, Washington, DC: Office of Air Force History, 1983), 11.

¹² Davis, *Carl A. Spaatz*, 362.

¹³ Davis, *Carl A. Spaatz*, 288.

of combat.¹⁴ These heavy losses seriously degraded the Mighty Eighth's operational effectiveness. It had not attempted a deep-penetration mission into Germany in clear weather since the bloody October 14, 1943, raid on Schweinfurt.¹⁵ In the official account of the Army Air Force's history, Arthur Ferguson remarked, "the Eighth Air Force had for the time being lost air superiority over Germany."¹⁶

Doolittle's first large-scale mission illustrated the difficulty of bombing the German industrial base. On January 11, 1944, 663 aircraft from 12 combat wings attacked aircraft factories in Oschersleben, Halberstadt, and Brunswick, Germany.¹⁷ The mission did not go well. Deteriorating weather conditions hampered the flight rendezvous, and Doolittle ordered a partial recall of the 3rd Bombardment Group.¹⁸ Amid the confusion, only a third of the dispatched bombers struck their primary targets.¹⁹ Moreover, the bomber crews faced over 275 enemy interceptor aircraft, and their fighter escort "was not exceptionally good."²⁰ The mission lost 60 heavy bombers, equal in number to the October 14 mission over Schweinfurt.²¹ To make matters worse, the Eighth mismanaged the press release of the mission, which made it appear that the Eighth was trying to hide a disaster.²² Doolittle's command of the Eighth Air Force was not off to an auspicious start.

Following the January 11 mission, Doolittle's primary concern became degrading the effectiveness of German fighters. In a January 14 letter to Arnold, he said, "this is the most critical period in the battle for

¹⁴ Davis, *Carl A. Spaatz*, 288.

¹⁵ Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II*, vol. 2, *Europe: Torch to Pointblank, August 1942 to December 1943* (1949; new imprint Washington, DC: Office of Air Force History, 1983), 705-706.

¹⁶ Craven and Cate, *Europe: Torch to Pointblank*, vol. 2, 705.

¹⁷ History, Headquarters Eighth Air Force, 1-31 January 1944, AFHRC call no. 520.01 V.1, 16.

¹⁸ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 23.

¹⁹ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 23.

²⁰ History, Headquarters Eighth Air Force, 1-31 January 1944, AFHRC, 16.

²¹ History, Headquarters Eighth Air Force, 1-31 January 1944, AFHRC, 16.

²² Davis, *Carl A. Spaatz*, 304.

air supremacy over Europe.”²³ Similarly, writing Spaatz on January 19, Doolittle concluded, “A study of the missions which have been conducted by this Air Force recently reveals that enemy fighters have caused the majority of the losses incurred by our bombardment units.”²⁴ Indeed, in the early months of 1944, the Luftwaffe was devastating the Eighth’s bomber formations. The January 11 mission debrief reported that German single-engine fighters were equipped with belly fuel tanks, which enabled them to attack for extended periods of time.²⁵ Furthermore, twin engine Ju-88s and Me-110s attacked bombers with rockets, while remaining clear of the 50-caliber defensive fire. The German fighter tactics were shrewd. The deadly rocket attacks shredded concentrated bomber formations. But if bombers loosened their formation in response to the rockets, they became more vulnerable to attack from the single-engine fighters.²⁶ Doolittle believed the solution to this problem was to take the fight to the enemy. The fighters had to be cut loose.

The available evidence demonstrates that Doolittle had a direct influence on changing fighter tactics in the Eighth Air Force. In his memoirs Doolittle claimed responsibility for changing the fighter tactics, which he considered “the most important and far-reaching military decision I made during the war.”²⁷ Minutes from a January 21 commanders’ meeting document that Doolittle emphasized “the fighter role of protecting the bombardment formation should not be minimized, but our fighter aircraft should be encouraged to meet the enemy and destroy him rather than be content to keep him away.”²⁸ Moreover,

²³ Doolittle to Arnold, letter, 14 January 1944, Doolittle Papers, Box 16, Special Correspondence, Library of Congress.

²⁴ Doolittle to Spaatz, letter, 19 Jan 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

²⁵ History, Headquarters Eighth Air Force, 1-31 January 1944, AFHRC, 16.

²⁶ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 10.

²⁷ Doolittle and Glines, *I Could Never be so Lucky Again*, 353.

²⁸ Minutes, Commanders’ Meeting 21 Jan 1944, AFHRC call no. 520.01 V.2, 2.

Doolittle's deputy, Brigadier General Earle "Pat" Partridge, later confirmed the offensive fighter posture was his boss's idea.²⁹

The decision to 'let the fighters loose' marked an innovation in fighter tactics. The prevailing AAF doctrine discouraged escort fighters from pursuing enemy aircraft.³⁰ AAF Field Manual 1-15, *Tactics and Technique of Air Fighting*, dated April 10, 1942, stated the mission of close escorts "precludes their seeking to impose combat on other forces except as necessary to carry out their defensive role."³¹ Likewise, AAF Field Manual 1-5, updated in January 1943, considered employing fighters in offensive patrols as a "relatively inefficient" use of air power.³² The Eighth Air Force under Eaker's command had closely followed this guidance. To conserve his bomber force, Eaker prohibited his fighters from pursuing the Luftwaffe.³³ Discussion held during an Eighth Air Force commanders' meeting in September 1943 illustrates this bomber-centric philosophy. The commanders agreed that the fighter's priority was escorting the bombers, not destroying German fighters.³⁴ The defensive policy frustrated fighter pilots. It ceded the initiative to German fighter pilots and wasted the escort's offensive potential.³⁵ For example, on 3 November 1943, P-38s achieved their first aerial victories in the European theater with no losses. But the number of kills was limited to three because strict rules of engagement prevented the fighters from pursuing enemy aircraft.³⁶ Doolittle's pursuit policy changed the

²⁹ Partridge later remarked that Doolittle used the tactic in the Twelfth Air Force and brought it with him to the Eighth Air Force. Partridge, Interview by Strum and Ahmann, 23-25 April 1974, 239.

³⁰ Davis, *Carl A. Spaatz*, 360.

³¹ Army Air Force Field Manual 1-15, *Tactics and Technique of Air Fighting* (Washington, DC: Government Printing Office, 1942), 2.

³² Army Air Force Field Manual 1-5, *Employment of Aviation of the Army* (Washington, DC: Government Printing Office, 1943), 36.

³³ Davis, *Carl A. Spaatz*, 360.

³⁴ Quoted in Davis *Carl A. Spaatz*, 298.

³⁵ Geoffrey Perret, *Winged Victory: The Army Air Forces in World War II* (New York: Random House, 1993), 272

³⁶ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 10.

Eighth's fighter philosophy and "stood official doctrine on its head."³⁷ Fighter escorts were transformed from passive defenders to aggressive attackers.

The offensive tactics also optimized the use of fighter escorts. Fighters performing close escort had previously rendezvoused with bomber formations and followed them to the target or to the limits of their range. Because fighters cruised at a higher speed than bombers, the "little friends" weaved to stay in position. These maneuvers wasted fuel and reduced the fighter's escort range. Shortly after Doolittle arrived, the Eighth implemented a relay-escort system. Under the new policy, a fighter group rendezvoused with bomber formations and escorted them for 150 to 200 miles until they transferred escort responsibilities to another group.³⁸ The new tactic optimized the use of the three different types of fighters in the Eighth Air Force: P-47s escorted the formations during the shallow-penetration portions of the mission, P-38s during the medium-penetration, and the P-51s assumed escort duties for the deepest portion of the route.³⁹

The new tactic also enabled a new role for fighter aircraft – strafing ground targets. Returning fighters, free from their escort duties, began to drop to low altitude in search of targets of opportunity. This tactic, however, also conflicted with the prevailing AAF doctrine, which highly discouraged the use of "fighter aviation for ground attack missions."⁴⁰ Nonetheless, Doolittle expressed interest in the practice, and on February 8 he accepted a report from Kepner on low-altitude fighter operations.⁴¹ Doolittle incentivized the tactic by awarding aerial victories

³⁷ Davis, *Carl A. Spaatz*, 360.

³⁸ Davis, *Carl A. Spaatz*, 361.

³⁹ Davis, *Carl A. Spaatz*, 361.

⁴⁰ AAF Field Manual 1-5 stated "The use of fighter aviation for ground attack missions is only justified when: (1) No other means will suffice, (2) Fighter aviation is not needed to gain or maintain air supremacy and (3) Fighter aviation does not need to be conserved for future employment in its normal role." AAF FM 1-5, 32.

⁴¹ Minutes, Commanders' Meeting, 8 February 1944, AFHRC call no. 520.01 V.2.

for aircraft destroyed on the ground.⁴² On March 2, Doolittle inquired about the feasibility of conducting fighter sweeps under low-cloud ceilings.⁴³ These conditions, common in Europe, often prohibited large-scale bombing operations. Accordingly, in April, Doolittle ordered fighter sweeps when weather precluded bomber attacks.⁴⁴ These missions proved successful; and the number of enemy aircraft destroyed on the ground by fighters increased from one in February (the first claimed in the European theater), to 76 in March, and 527 in April.⁴⁵

Doolittle also intervened in Eighth Air Force bomber tactics. He issued guidance to Bomber Training Command to teach his incoming pilots to fly tighter formations, noting these pilots “would loosen them up if found necessary.”⁴⁶ His rationale is evident in a January 19 letter to Spaatz. Using mathematical reasoning, Doolittle explained that a loose bomber formation exponentially increased the area fighters had to defend, which in turn reduced the effectiveness of the escort. Doolittle also emphasized the importance of formation integrity, tighter spacing between formations, and a reduced speed to allow slow aircraft to maintain position.⁴⁷ He reemphasized the final point in a March 22, 1944 commanders’ meeting in which he proposed a slower egress of combat formations from the target area to protect stragglers.⁴⁸ His

⁴² Davis, *Carl A. Spaatz*, 365. However, when aerial kills began to attract attention of the press, Doolittle insisted that kills be distinguished between aerial and ground victories. Minutes, Commanders’ Meeting 6 April 1944, AFHRC call no. 520.01 V.2, 4.

⁴³ Minutes, Commanders’ Meeting, 2 March 1944, AFHRC call no. 520.01 V.2, 2. Interestingly, in this same meeting, Curtis LeMay asked Kepner if fighter aircraft could suppress flak to support low altitude bomber operations at 2,000-3,000 feet. LeMay was already contemplating the use of the tactics that he would eventually employ against Japan cities.

⁴⁴ Davis, *Carl A. Spaatz*, 367.

⁴⁵ In April, the 527 aircraft destroyed on the ground surpassed the 418 fighters destroyed in the air. *Army Air Forces Statistical Digest: World War II* (Washington, DC: Office of Statistical Control, 1945), 263, Table 167

⁴⁶ Doolittle to Partridge, staff correspondence, 17 February 1944, Doolittle Papers, Box 19, Library of Congress.

⁴⁷ Doolittle to Spaatz, letter, 19 January 1944, Doolittle Papers, Box 19, Library of Congress.

⁴⁸ Minutes, Commanders’ Meeting, 22 March 1944, AFHRC, 3.

concerns were reasonable. Over half the Luftwaffe's heavy-bomber kills were against aircraft that fell out of formation.⁴⁹

Doolittle's involvement in fighter and bomber tactics enhanced Eighth Air Force operations. By the end of January, Eighth Air Force fighter pilots had abandoned close escort in favor of "ultimate pursuit" of the enemy; and bombers were flying tighter formations.⁵⁰ A report comparing tactics of the Eighth Air Force to its sister unit, the Fifteenth Air Force, documented the tactical differences. The evaluation claimed combat conditions for the Fifteenth were "very similar to those existing within the Eighth Air Force."⁵¹ The document indicates, however, that Eighth Air Force bomber pilots flew tighter formations. The Fifteenth's extended formations made "the work of the escort infinitely more difficult and that of the enemy interceptors far simpler."⁵² The analyst also noted that fighter pilots in the Eighth Air Force had "adopted a more aggressive policy."⁵³

Doolittle's implementation of aggressive tactics was not, however, without risk. In the short term, he understood that the Eighth would likely incur increased losses due to his intervention in tactics. On March 2, Doolittle cautioned his commanders that neutralizing enemy fighters would "not necessarily show immediately and the crews should be so advised."⁵⁴ Indeed, in early 1944 bomber forces sustained heavy losses. For example, in February, the Eighth Air Force lost 299 heavy bombers – one-fifth of its forces.⁵⁵ General Curtis LeMay complained that such

⁴⁹ History, Headquarters Eighth Air Force, 1944-1945 vol. 2, AFHRC call no. 520.01 V.2, 52.

⁵⁰ Davis, *Carl A. Spaatz*, 360.

⁵¹ Report of observation by James A. Goodson dated 17 April 1944, Doolittle files, Box 19, 1944 Operational records, Library of Congress.

⁵² Report of observation by James A. Goodson dated 17 April 1944, Doolittle files, Box 19, 1944 Operational records, Library of Congress.

⁵³ Report of observation by James A. Goodson dated 17 April 1944, Doolittle files, Box 19, 1944 Operational records, Library of Congress.

⁵⁴ Minutes, Commanders' Meeting, 2 March 1944, AFHRC, 3.

⁵⁵ Williamson Murray, *Strategy for Defeat: The Luftwaffe 1933-1945* (Maxwell, AL: Air University Press, 1983), 235, Table L.

losses reduced his division's efficiency.⁵⁶ The arrival of spring did not bring appreciable improvement. An April 27 raid on Berlin lost 63 bombers, nearly as many as the 69 lost on the strike of March 6.⁵⁷ Moreover, bomber attrition climbed from 349 or 23.3 percent in March to 409 nearly 25 percent in April.⁵⁸ Bomber crews, however, were not the only ones who suffered losses due to the aggressive tactics; strafing the enemy countryside was also dangerous business. Antiaircraft artillery was especially effective against low-flying aircraft, and Germans placed disused aircraft in the open to lure unsuspecting pilots into deadly crossfire.⁵⁹ The tactics worked. Fighter pilots suffered a casualty rate five times higher while strafing targets on the ground than battling Luftwaffe fighters in the air.⁶⁰ Indeed, Fighter losses from German anti-aircraft artillery grew from 13 in February to 226 by June.⁶¹

Despite the losses, the Eighth Air Force's aggressive tactics wrested the initiative of aerial combat from the Luftwaffe. Before February 1944, German fighters usually waited for fighter escorts to leave before commencing an attack. The Eighth's relay system of escort rendered this tactic ineffective. Moreover, twin engine Ju-88s and Me-110s proved no match for the nimble, aggressive American fighters.⁶² By the end of March, the large fighters and their feared rocket attacks seldom impeded the Eighth's daylight strikes. The Luftwaffe began to deteriorate rapidly. Between March and April, the German Air Force replaced virtually all its fighter aircraft and suffered a 40 percent turnover in pilots.⁶³ Meanwhile, the Eighth's losses declined by 100 bombers in May, and the

⁵⁶ Minutes, Commanders' Meeting, 2 March 1944, AFHRC, 2.

⁵⁷ Davis, *Carl A. Spaatz*, 393.

⁵⁸ Murray, *Strategy for Defeat*, 235, Table L.

⁵⁹ Mark K. Wells, *Courage and Air Warfare: The Allied Aircrew Experience in the Second World War* (Essex, England.: Routledge, 1995), 45.

⁶⁰ Davis, *Carl A. Spaatz*, 367.

⁶¹ *Army Air Forces Statistical Digest*, 255, Table 159.

⁶² Murray, *Strategy for Defeat*, 242.

⁶³ Davis, *Carl A. Spaatz*, 394.

trend continued for the remainder of the war. Averaged over the course of 1944, the Eighth lost on average 1.9 percent of its heavy bomber fleet per mission into the enemy's airspace, a stark decrease from 5.1 percent in 1943.⁶⁴ These results can be partially attributed to the aggressive escorts that hunted down small formations of German fighters.⁶⁵ Major General Adolph Galland, Commander of the German fighter force, commented in his memoirs that:

Only now did the superiority of the American fighters come into its own. They were no longer glued to the slow-moving bomber formation, but took action into their own hands. Wherever our fighters appeared, the Americans hurled themselves at them. They went over to low-level attacks on our airfields. Nowhere were we safe from them, and we had to skulk on our own bases. During takeoff, assembling, climb and approach to the bombers, when we were in contact with them, on our way back, during landing, and even after that the American fighters attack with overwhelming superiority.⁶⁶

Doolittle's perseverance in his aggressive approach required a significant amount of moral courage. Although the decision ultimately led to lower attrition, four agonizing months of increased losses passed before the command realized the benefits. It was not an easy period for the Eighth Air Force commander. As losses mounted, multiple subordinate commanders objected to the decision, believing the aggressive tactics unnecessarily exposed bombers to enemy fighters. In his memoirs, Doolittle commented that letting the fighters loose represented the "most controversial" decision he made in the war.⁶⁷ Likewise, shortly after the war, Doolittle discussed the decision when speaking about the challenges of command to West Point cadets. With his youngest son in the crowd, Doolittle proclaimed a commander in war

⁶⁴ Murray, *Strategy for Defeat*, 345, Appendix 4.

⁶⁵ Davis, *Carl A. Spaatz*, 370.

⁶⁶ Adolf Galland, *The First and the Last: The Rise and Fall of the German Fighter Forces, 1938-1945* trans. Mervyn Savill (New York: Henry Holt and Company, 1954), 264.

⁶⁷ Doolittle and Glines, *I Could Never be so Lucky Again*, 353.

must “determine whether heavy losses for a short period will, in the long run, prove more economical than a lower loss rate over a longer period.” He explained to the young aspiring cadets that “this is almost axiomatic—but it is difficult to put it into effect.”⁶⁸

A number of conditions contributed to the defeat of the Luftwaffe in the spring of 1944. As noted in the previous chapter, the industrial strength of the United States had risen to a point in 1944 that the Eighth Air Force was provided the resources necessary to implement Doolittle’s tactics and strategy. He also possessed long-range fighters of sufficient quantity and quality to challenge the Luftwaffe over German skies. As Richard Davis rightly observed, “Spaatz, Doolittle, and Kepner had the ‘escort strength’ their predecessors lacked, and could thus place their fighters in loose escort.”⁶⁹ Also unlike his predecessor, Doolittle possessed adequate numbers of heavy bombers to sustain a strategic-bombing campaign against the German heartland. Moreover, Doolittle enjoyed the support of both superiors and subordinates, who shared his offensive mentality.

These factors, however, should not detract from Doolittle’s pivotal role in changing the tactical operations of the Eighth Air Force. He perceived the problem posed by German fighters and implemented innovative tactical solutions. His direct involvement in fighter and bomber tactics countered the standing Eighth Air Force policy and official doctrine. Even when faced with increasing losses, Doolittle remained firm in his decision. His aggressive spirit inspired tactical innovation and contributed to the eventual collapse of the Luftwaffe.

Technical innovation

Doolittle also worked to overcome significant technical deficiencies of several aircraft within his command. An examination of Doolittle’s role

⁶⁸ Address by Lt Gen J. H. Doolittle, West Point, N.Y., 22 October 1945, Doolittle Papers, Series IV, Box 7, Folder 8, McDermott Library, 7.

⁶⁹ Davis, *Carl A. Spaatz*, 360.

in technical innovation provides the opportunity to assess the value of a commanding general who is a trained aeronautical engineer.

Soon after assuming command, Doolittle developed an organic capability to test and implement technical ideas within the Eighth Air Force. The Eighth Air Force's official history states that Doolittle "recognized the urgent need for a special staff section to consolidate technical requirements, assist the inspector or A-4 sections in troubleshooting and the solution of minor problems, and to act generally as the intermediate link between the combat units and the established engineering activities of the Material and Service Commands."⁷⁰ To achieve this end, Doolittle activated the Operational Engineering Section on February 21. The mission of the new section was to "collect, coordinate, test and evaluate desires of combat units and of this Headquarters in the development, use and adaptation of their equipment."⁷¹ Accordingly, the section coordinated all plans for aircraft modifications.⁷² Doolittle expected that his Operational Engineering Section would increase the performance of aircraft and provide recommendations for improvement.⁷³

One of the organization's first tasks was to identify the source of P-38 engine problems. In the Pacific theater, the twin-engine fighter had earned the respect of fighter pilots, friendly and enemy alike. In England, however, the Lightning had severe engine problems. During one period, the P-38J variant experienced a nearly 50 percent mechanical failure rate.⁷⁴ Moreover, half the P-38 combat losses were attributed to engine problems.⁷⁵ This deficiency cost the Eighth dearly

⁷⁰ History, Headquarters Eighth Air Force, 1-31 July 1944, vol. 1, AFHRC, 179a.

⁷¹ Eighth HQ to USSAF, letter, 12 July 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

⁷² History, Headquarters Eighth Air Force, 1944-1945, vol. 2, AFHRC, 21.

⁷³ Eighth HQ to USSAF, letter, 12 July 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

⁷⁴ Roger A. Freeman *Mighty Eighth War Diary* (New York: Jane's, 1981), 183, 297.

⁷⁵ Davis, *Carl A. Spaatz*, 321.

on its second mission to Berlin. During the raid, the 55th Fighter Group, flying P-38s, was forced to return early due to an excessive number of engine failures.⁷⁶ German fighters exploited the resulting escort gap by downing 20 bombers from the 3rd Bombardment Division in less than 30 minutes.⁷⁷

It was thus no surprise when Doolittle selected Colonel Benjamin S. Kelsey, a fellow graduate of MIT and an experienced test pilot, to lead the newly formed Operational Engineering Section.⁷⁸ The general had known Kelsey since the 1920s – he had been Doolittle’s safety observer on the first official blind flight. In the 1930s Kelsey served at Wright Field as the Chief of the Fighter Project Branch.⁷⁹ There he flew the first P-38 test flight and was directly involved in the aircraft’s development.⁸⁰

A week after its initiation, the Operational Engineering Section provided Doolittle several insights into the P-38’s technical problems. A report titled “P-38 Engine Failures” noted that the 76 recent engine failures had occurred exclusively in the P-38J. The previous model, the P-38H, suffered no such failures; therefore, the likely cause was an engine modification that accompanied the P-38J upgrade. The report further speculated that the engine troubles were likely due to a deficiency in the carburetor, which produced an “abnormally low fuel mixing temperature” in the colder Europe climate.⁸¹ The fault resulted in an overly lean fuel mixture, which, in turn, caused a connecting rod in the engine to fail. This failure caused engine fires. The report offered several recommendations to mitigate the engine problem. These included modifying the engine’s power settings and sealing an intercooler gill.

⁷⁶ Freeman, *Mighty Eighth War Diary*, 195.

⁷⁷ Quoted in Davis, *Carl A. Spaatz* 371.

⁷⁸ History, Headquarters Eighth Air Force, 1-31 July 1944, AFHRC, 179b.

⁷⁹ Benjamin S. Kelsey, *The Dragon's Teeth? The Creation of United States Air Power for World War II* (Washington, DC: Smithsonian, 1982), 7.

⁸⁰ Davis, *Carl A. Spaatz*, 707 n113.

⁸¹ OES Report dated 28 February 1944, Doolittle Papers, Box 19, 1944 Operational records, Library of Congress.

These modifications were thought to ameliorate the P-38s engine problems, “but not sufficiently to call it a final ‘fix.’”⁸² The report surmised that higher-octane fuel could also reduce engine difficulties until a permanent design solution was implemented.⁸³

Doolittle made quick use of his staff’s findings. The day after Doolittle received the report, he dispatched a letter to USSTAF, whose subject was “Special Fuel for P-38J’s.” He explained the Operational Engineering Section’s discoveries and recommended acquiring high-octane fuel for P-38 operations.⁸⁴ In a commanders’ meeting the following day, Doolittle announced that arrangements had been made to secure two million gallons of special fuel for the ailing P-38s.⁸⁵ On March 6 the engine manufacturer, the Allison Division of General Motors Corporation, issued a response acknowledging the problem and announced measures it was taking to rectify the malfunctions.⁸⁶

But as D-Day approached, P-38 engine problems continued to degrade Eighth Air Force operations. On March 23 Doolittle increased the number of P-38s per group from 75 to 90 to reduce the impact of the engine troubles.⁸⁷ Doolittle also experienced these engine problems personally. On March 30 his plane had an engine fire shortly after takeoff, and he had to make an emergency landing.⁸⁸ In his logbook he recorded a 10-minute flight in a P-38 with the remark “threw con-rod in port engine.”⁸⁹ The same day the Operational Engineering Section submitted a report updating him on efforts to improve the P-38’s

⁸² OES Report dated 28 February 1944, Doolittle Papers, Box 19, 1944 Operational records, Library of Congress.

⁸³ OES Report dated 28 February 1944, Doolittle Papers, Box 19, 1944 Operational records, Library of Congress.

⁸⁴ Doolittle to Spaatz, letter, 1 March 1944, Doolittle Papers, Box 19, 1944 Operational records, Library of Congress.

⁸⁵ Minutes, Commanders’ Meeting, 2 March 1944, AFHRC, 4.

⁸⁶ Jahnke to Partridge, letter, 6 March 1944, Doolittle Papers, Box 19, 1944 Operational records, Library of Congress.

⁸⁷ History, Headquarters Eighth Air Force, 1944-1945, vol. 2, AFHRC, 64.

⁸⁸ Doolittle and Glines, *I Could Never be so Lucky Again*, 369.

⁸⁹ Logbook Entries, March 1944, Doolittle Papers, Series XVI, Box 1, McDermott Library.

carburetor.⁹⁰ Because of Doolittle's reservations about P-38 reliability, on April 6 he prohibited the airplane from escorting valuable F-5 reconnaissance aircraft.⁹¹ At the same meeting, Partridge announced that B-17s were being used for weather reconnaissance, suggesting continued maintenance problems with the P-38s.⁹²

Doolittle ultimately chose to circumvent the P-38's deficiencies by replacing it with the P-51. By the end of June, three months of testing had failed to resolve the P-38's engine troubles. On June 27 Allison Engines dispatched a letter to Kelsey proposing a detailed test plan to investigate the engine failures.⁹³ On July 14, 1944, Doolittle composed a scathing letter to Arnold stating that the deficiencies of the P-38 had created a "general lack of confidence in the airplane."⁹⁴ Among his many recommendations was the insistence on a complete redesign of the carburetor.⁹⁵ Doolittle's condemnation of the P-38 coincided with the transition of three of the four VIII fighter command's P-38 groups to P-51s.⁹⁶ The 479th Fighter Group continued to fly P-38s until its final squadron converted to P-51s in October 1944.⁹⁷

The P-38 was not the only aircraft to dissatisfy Doolittle. The B-24 was also plagued by poor performance. By the beginning of 1944, the B-24 had undergone several modifications to enhance its survivability. These changes included increased defensive firepower; armor plating;

⁹⁰ Cass Hough to Commanding General, HQ Eighth AF, memorandum, 30 March 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

⁹¹ Minutes, Commanders' Meeting, 6 April 1944, AFHRC call no. 520.01 V.2, 5.

⁹² Minutes, Commanders' Meeting, 6 April 1944, AFHRC, 3.

⁹³ McCrae to Kelsey, letter, 27 June 1944, Doolittle Papers, Box 19, 1944 Operational records, Library of Congress.

⁹⁴ Doolittle to Arnold, letter, 14 July 1944, Doolittle Papers, Box 19, 1944 Operational records, Library of Congress.

⁹⁵ Doolittle to Arnold, letter, 14 July 1944, Doolittle Papers, Box 19, 1944 Operational records, Library of Congress.

⁹⁶ Freeman, *Mighty Eighth War Diary*, 183, 297.

⁹⁷ The 479th Fighter Group flew its final P-38 mission on 9 October 1944. The 436th Fighter Squadron was the last to convert over to P-51s. Kent D. Miller, *Fighter Units & Pilots of The 8th Air Force: September 1942- May 1945. Vol. 1.* (Atglen, PA: Schiffer Military History, 2001), 139, 475.

bulletproof glass; and larger, self-sealing fuel tanks.⁹⁸ The added capability came, however, with a corresponding increase in weight; the aircraft now exceeded its design weight by 6,000 pounds.⁹⁹ The added bulk created stability problems and caused combat-loaded B-24s to “wallow” at high altitude.¹⁰⁰ Thus, B-24s flew 2,000 to 4,000 feet lower than the B-17s, which made them more vulnerable to enemy fighters and flak.¹⁰¹ In a comparison of the B-24 to the B-17 conducted in April 1944, the Statistical Control Division concluded that the B-24 was “approximately 79% more vulnerable.”¹⁰² This realization was not lost on the aircrews. Because enemy fighters tended to focus efforts on B-24s, B-17 crews somewhat trenchantly jested that they preferred an escort of Liberators to “little friends.”¹⁰³

Doolittle took quick action to correct the B-24’s technical deficiencies. In January he directed the removal of the ball turrets from 26 B-24 D aircraft. This modification improved stability by returning the plane’s center of gravity to its design location. The reduced weight also increased the aircraft’s high-altitude fuel efficiency, speed, and handling.¹⁰⁴ To improve performance further, Doolittle ordered the removal of the waist-gunner station and moved minor equipment to the forward portion of the aircraft.¹⁰⁵ He also increased the Eighth’s capacity to modify aircraft. In January he realigned the Eighth’s three Base Air Depots to allow each to specialize in a limited number of airframes. This

⁹⁸ Arnold to Spaatz, letter, 13 March 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

⁹⁹ Arnold to Spaatz, letter, 13 March 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

¹⁰⁰ Benjamin S. Kelsey, *The Dragon’s Teeth*, 133.

¹⁰¹ Benjamin S. Kelsey, *The Dragon’s Teeth*, 133.

¹⁰² Statistical Control Division “Statistical Comparison B-17 – B-24 Models”, 3 April 1944, National Archives Record Group 18, Box 727, 7. Acquired from the private collection of Dr. Richard Muller.

¹⁰³ Doolittle to Arnold, letter, 14 February 1944, Doolittle files, Box 19, 1944 Operational Records, Library of Congress.

¹⁰⁴ History, Headquarters Eighth Air Force, 1944-1945, vol. 2, AFHRC, 8.

¹⁰⁵ Doolittle to Arnold, letter, 14 February 1944, Doolittle files, Box 19, 1944 Operational Records, Library of Congress.

move enabled the depots to develop “production line” techniques that increased efficiency.¹⁰⁶ The number of bombers modified more than doubled from 350 in February to 840 in March.¹⁰⁷

Doolittle also sought help from Washington to remedy the B-24 problems. On February 13, he sent a letter through Spaatz, to Arnold, addressing “B-24 Modification and Design.”¹⁰⁸ He identified the problem as: “Efforts to increase the ability of the B-24 to protect itself against enemy fighters through an increase in its defensive fire power have seriously reduced the performance of this aircraft.”¹⁰⁹ He noted that the performance problems degraded operations by precluding mixed formations of B-24s and B-17s. He also noted that the defects undermined the confidence of his crews. Doolittle submitted specific design changes that would, in his opinion, “assure [the B-24’s] continued usefulness.”¹¹⁰ Spaatz generally agreed with his subordinate’s recommendations. The USSTAF commander did not, however, want upgrades interfering with the supply of new airplanes. Spaatz remarked: “Although I am in general concurrence with Doolittle’s comments, I must say that I cannot sponsor any extensive modifications or redesign program in the B-24 airplane which would prejudice the now scheduled deliveries to this theater.”¹¹¹ Nevertheless, Spaatz agreed that the “modifications should be put into a long-range program...to improve this

¹⁰⁶ History, Headquarters Eighth Air Force, 1944-1945, vol. 2, 4.

¹⁰⁷ History, Headquarters Eighth Air Force, 1944-1945, vol. 2, 8.

¹⁰⁸ Doolittle to Arnold, letter, 14 February 1944, Doolittle files, Box 19, 1944 Operational Records, Library of Congress.

¹⁰⁹ Doolittle to Arnold, letter, 14 February 1944, Doolittle files, Box 19, 1944 Operational Records, Library of Congress.

¹¹⁰ Doolittle to Arnold, letter, 14 February 1944, Doolittle files, Box 19, 1944 Operational Records, Library of Congress.

¹¹¹ Spaatz to Arnold, letter, 18 February 1944, National Archives, Record Group 18, Box 727. Acquired from the private collection of Dr. Richard Muller; Later, Northrop Aircraft Chief Executive Officer Oliver Echols, who served as a general officer in the war, revealed Arnold was indeed hesitant to interrupt aircraft production to implement design changes. Transcript of Proceedings of the Meeting with the AIA Held in Gen Vandenberg’s Office on 7 June 1951, corrected copy, 15 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 33

airplane.”¹¹² Several weeks passed with no response from Washington. Meanwhile, from February 20-25, Doolittle dispatched B-24s on missions to Germany in support of Big Week; and in early March the Liberators flew three strikes against Berlin. B-24s continued to suffer higher losses than the B-17s. For example, on the February 24 raids on Schweinfurt and Gotha, Doolittle lost 33 out of 239 B-24s, but only 11 out of 266 B-17s.¹¹³

By March Doolittle realized that Washington would not rectify the B-24's inadequacies. He hoped that his maintenance depot, with direction from his Operational Engineering Section, would be able to mitigate the B-24 problems; but he lacked an engineer with sufficient B-24 experience to oversee the endeavor. He therefore drafted a letter to Arnold with the subject "Assignment of Officer for B-24 Modifications." His impatience was palpable. Doolittle argued that B-24s would soon comprise half of his heavy bomber force and that "the effectiveness of the B-24 unit is...not satisfactory."¹¹⁴ With the impending invasion of Europe just over the horizon, Doolittle pleaded for a plan that would increase the effectiveness of his B-24 force by June. This urgency mandated that aircraft modifications occur at the theater maintenance depot. Referring to his modification program, he noted that he had "taken action to initiate certain changes to improve its performance," and requested a B-24 test pilot to oversee technical modifications made in the field.¹¹⁵

Aware of his impassioned state, Doolittle sought the advice of his superior. He sent Spaatz a draft of his letter with a hand-written memo stating: "While this letter contains only a statement of certain

¹¹² Spaatz to Arnold, letter, 18 February 1944, National Archives, Record Group 18, Box 727.

¹¹³ Freeman, *Mighty Eighth War Diary*, 186-187.

¹¹⁴ Doolittle to Arnold, letter, 13 March 1944, Doolittle files, Box 19, 1944 Operational Records, Library of Congress.

¹¹⁵ Doolittle to Arnold, letter, 13 March 1944, Doolittle files, Box 19, 1944 Operational Records, Library of Congress.

unfortunate facts it is felt that it may antagonize Gen Arnold and defeat it's [sic] purpose. May I have your reactions before transmittal?"¹¹⁶ Spaatz agreed that field modifications could perhaps mitigate B-24 problems without impeding production flow. Spaatz elected not to forward Doolittle's abrasive letter to Arnold, but instead dispatched a more temperate request for a qualified B-24 specialist to oversee field modifications. He summarized his request by stating: "We feel that under proper engineering guidance many corrective changes can be made at the stations and in the Base Depots."¹¹⁷

Meanwhile, Doolittle's February 14 letter detailing the ineffectiveness of the B-24 caught the Air Staff's attention. In March 13 correspondence, which passed Spaatz's letter in transit, Arnold remarked that the recommendations concerning the B-24 were "most welcome and appreciated." Arnold agreed to implement efforts that incorporated Doolittle's recommendations into the production of new aircraft. He advised, however, that he was balancing the "best practicable compromise" between the demands of current operations, future requirements, and production capability.¹¹⁸ This implied that B-24 modifications would not arrive in time for D-Day. In addition to Arnold's response was a letter from Major General H. A. Craig, the Assistant Chief of Staff for Operations, Commitments, and Requirements. Craig reassured Doolittle that the Air Staff was "aware of the deficiencies in the B-24 and that we are doing everything in our power to improve the airplane through modification and redesign."¹¹⁹ Problems with the B-24 led Arnold to direct Craig to conduct a comparative analysis of the AAF's

¹¹⁶ Doolittle to Spaatz, letter, (no date), Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

¹¹⁷ Spaatz to Arnold, letter, 16 March 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

¹¹⁸ Arnold to Spaatz, letter, 13 March 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

¹¹⁹ Craig to Doolittle, letter, 14 March 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

heavy bombers. In May Craig concluded that statistics “overwhelmingly favor the B-17 over the B-24.”¹²⁰ Consequently, he recommended an increase in production of the former and a curbing of the latter.¹²¹

Doolittle’s design recommendations were ultimately realized in the production of the B-24L and M models. The L variant, designed in response to the AAF’s demand to reduce weight, replaced the heavy Sperry ball turret with a ring mount consisting of two .50 caliber machine guns. Other modifications removed the A-6B tail turret in favor of a twin .50 caliber mount. The B-24M incorporated further weight savings with a new version of the tail-turret and open waist-gunner positions. Cockpit visibility was also improved with a new windshield design. Consolidated Aircraft built 1,667 B-24Ls and 2,593 B-24Ms during the course of the war. A B-24N variant incorporating a single tail to improve stability was under contract when the war ended in 1945. Sadly, the B-24L and M models arrived in the field too late to have a significant effect on the outcome of the war.¹²²

To compensate for the delay, Doolittle made several organizational changes to offset the B-24’s deficiencies. In the summer of 1944 he reassigned all special operations units with B-24s. Henceforth, all radio countermeasure, night leaflet, and carpetbagger missions were conducted by B-24s.¹²³ This policy allocated a greater number of B-17s to bombing operations. Furthermore, in the summer of 1944 B-24 groups in the 3rd Division were converted to B-17 platforms, further reducing the impact of the less effective B-24.¹²⁴

¹²⁰ Craig to Arnold, memorandum, 22 March 1933, Record Group 18, Box 727. Acquired from the private collection of Dr. Richard Muller.

¹²¹ Craig to Arnold, memorandum, 22 March 1933, National Archives, Record Group 18, Box 727. Acquired from the private collection of Dr. Richard Muller.

¹²² Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II*, vol. 6, *Men and Planes* (1955; new imprint Washington, DC: Office of Air Force History, 1983), 207.

¹²³ Carpetbagger missions were special missions flown to support the Office of Strategic Services (OSS). These missions were frequently flown at night and transported agents and supplies into, and out of, occupied German territory. History, Headquarters Eighth Air Force, 1944-1945, vol. 2, 65.

¹²⁴ History, Headquarters Eighth Air Force, 1944-1945, vol. 2, AFHRC, 65.

Despite his inability to rectify problems with the B-24 and the P-38 fully, Doolittle remained committed to the value of the Operational Engineering Section. In June he recommended to Spaatz that it become a standard component of each air force headquarters.¹²⁵ Arnold, however, rebuffed the plan because he did not approve of a large engineering and modification center within the field commands. He believed that such organizations duplicated the functions performed by Materiel Command and USSAF.¹²⁶ In a July 12 letter to Spaatz, Doolittle attempted to assuage Arnold's concerns by emphasizing the section's operational utility. He contended that the true purpose of the section was to gather technical suggestions from combat crews and forward them onto higher command. Doolittle justified the existence of his Operational Engineering Section by claiming, "experience to date has proven that this section has been most useful to this Air Force and to the USAAF and makes possible the most effective and timely use of our equipment."¹²⁷ He pushed his point further by requesting an additional 21 officers and 83 enlisted personnel to support the expansion of the section.¹²⁸ Spaatz again supported his innovative subordinate. He forwarded Doolittle's appeal to Arnold on August 1 with the assessment that "I see no tendency toward creating a 'little Wright Field' out of this section."¹²⁹ Doolittle thus kept his engineering section, but it did not become the AAF standard.

The events surrounding the modification of P-38s and B-24s suggest that a commanding general with engineering expertise can positively influence technical innovation. Doolittle was intimately

¹²⁵ History, Headquarters Eighth Air Force, 1944-1945, vol. 2, AFHRC, 21.

¹²⁶ History, Headquarters Eighth Air Force, 1944-1945, vol. 2, AFHRC, 21-22.

¹²⁷ Doolittle to USSTAF, letter, 12 July 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

¹²⁸ Doolittle to USSTAF, letter, 12 July 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

¹²⁹ History, Headquarters Eighth Air Force, 1944-1945, vol. 2, AFHRC, 21-22.

involved in Eighth Air Force efforts to innovate technically. His engineering skills allowed him to identify technical problems and provide practical solutions. Spaatz's correspondence during World War II reveals that recommendations for aircraft modifications originated almost exclusively from the Eighth Air Force. Similar proposals did not emerge from the Mediterranean theater. This is perhaps because Eaker was a trained lawyer, not an engineer. Doolittle's ability to identify technical problems suggests that engineering expertise at the higher echelons of command can foster technical innovation. Not surprisingly, the Eighth Air Force's narrative history noted that: "Studies that have been made of the modification of aircraft in the European Theater have indicated that the practice grew out of operational necessity rather than in accordance with carefully prepared plans."¹³⁰

But, Doolittle's attempts to foster technical innovation also reflect an element of naïveté. Arnold's lack of enthusiasm for Doolittle's Operational Engineering Section indicates the latter's failure to appreciate the problems of large-scale production and design. The massive size of the Eighth Air Force prevented Doolittle from achieving his full vision of technical innovation. His technical recommendations, insightful as they were, had little strategic effect on the war in Europe. His design recommendations did not materialize in time to be of significant use for the Eighth Air Force. Spaatz, the more experienced general, saw what Doolittle was unable to grasp. He supported his subordinate's efforts but did not allow Doolittle's technical enthusiasm to restrict the flow of materiel that maintained the Eighth's operational capability.

Blended Innovation

Marginal weather conditions were a crucial problem for the Eighth Air Force in World War II. Doolittle's predecessor, Ira Eaker, created the

¹³⁰ History, Headquarters Eighth Air Force, 1944-1945, vol. 2, AFHRC, 3.

482nd Bomb Group in an attempt to mitigate the effects of poor weather on operations.¹³¹ The unit flew heavy bombers equipped with a new ground-mapping radar called H2X, or “Mickey.” The system was derived from the British H2S radar, which had proven useful for identifying targets at night. “Pathfinders” from the 482nd led formations and used their radar to locate targets obscured by clouds. The poor European weather forced Eaker to use the Pathfinder force extensively, and 482nd aircrews led 17 of 20 missions in the final two months of 1943.¹³²

At the beginning of 1944, however, attempts to conduct bombing operations through clouds showed little promise.¹³³ The Eighth Air Force had only 12 B-17s equipped with H2X.¹³⁴ Additionally, the radar missions conducted during the last two months of 1943 were not successful. A photographic study concluded that less than four percent of the formations dropped bombs within one mile of their designated target.¹³⁵ The official Air Force history rightly noted that, “any increase in accuracy, it was evident, would depend on the acquisition of more and better equipment manned by more and still better-trained men than had hitherto been available.”¹³⁶ In other words, improvement of blind-bombing operations required a blend of technical and tactical innovation. Thus, it is appropriate to ask, did Doolittle improve the capacity of the Eighth Air Force to operate in marginal weather?

Soon after he assumed command, Doolittle implemented measures to improve radar-bombing training and tactics. On January 14 he arranged an exchange with the RAF of 12 B-17s for 12 Mark XXX Mosquitoes. Each British airplane was equipped with H2X and a 16-mm

¹³¹ Geoffrey Perret, *Winged Victory: The Army Air Forces in World War II* (New York: Random House, 1993), 273.

¹³² Spaatz to Commanding General, Army Air Forces, letter, 14 January 1944, Spaatz’s papers, Library of Congress, I-13 January 1944

¹³³ Craven and Cate, *Europe: Argument to VE Day*, 20.

¹³⁴ Davis, *Carl A. Spaatz*, 296-298.

¹³⁵ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 20.

¹³⁶ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 20.

camera to photograph the radar display.¹³⁷ During his first meeting with subordinate commanders, Doolittle explained that the Mosquitoes would “obtain target material for H2X operations, permitting better understanding of the target possibilities and permitting the operating crews to study the prospective target just as they will see it.”¹³⁸ In the following meeting, he supported a recommendation to discontinue the tactic of bombing based on a previous formation’s pathfinder. Instead, Doolittle ordered that each formation be equipped with at least two H2X pathfinders. He insisted that the size of the formations would increase as necessary to accommodate the limited number of H2X aircraft.¹³⁹ Doolittle directed Brigadier General Orvil Anderson to lead a meeting on dispersing H2X aircraft from Curtis LeMay’s 482nd Group in the 3rd Division.¹⁴⁰

Meanwhile, Spaatz lobbied for resources to support his subordinate’s emphasis on radar-bombing. In a January 14 letter to Arnold, Spaatz declared that the H2X system “offers enormous possibilities for further intensification of the bombing offensive against Germany.”¹⁴¹ Spaatz supported his claim by reporting that H2X permitted the Eighth Air Force to operate in weather conditions that would have previously precluded operations. Spaatz drove his argument home by closing his letter with: *“The most critical need of the Strategic Air Forces is for more Pathfinder aircraft. A few H2X airplanes now will profit our cause more than several hundred in six months.”*¹⁴²

Doolittle also used tactical innovation to cope with the European weather conditions. The operational environment of early 1944 had

¹³⁷ History, Headquarters Eighth Air Force, 1944-1945, vol. 2, AFHRC, 63.

¹³⁸ Minutes, Commanders’ Meeting, 21 January 1944, AFHRC call no. 520.01 V.2.

¹³⁹ Minutes, Commanders’ Meeting, 8 February 1944, AFHRC, 4.

¹⁴⁰ Minutes, Commanders’ Meeting, 8 February 1944, AFHRC, 4.

¹⁴¹ Spaatz to Commanding General, Army Air Forces, letter, 14 January 1944, Spaatz’s papers, Library of Congress, I-13 January 1944.

¹⁴² Emphasis in original. Spaatz to Commanding General, Army Air Forces, letter, 14 January 1944, Spaatz’s papers, Library of Congress, I-13 January 1944.

validated Doolittle's emphasis on radar-bombing. Between January 1 and February 15, only six of the Eighth Air Force's 21 missions were conducted under visual conditions.¹⁴³ Doolittle, however, hoped to increase opportunities for visual bombing. On March 2 he asked his commanders for ideas regarding "scouting out targets while in Germany."¹⁴⁴ The inquiry led to a new policy on bombing that encouraged bomber formations to strike alternate targets visually if clouds obscured the primary objective.¹⁴⁵ In the following meeting, Brigadier General Robert Williams outlined the concept of passing weather information from scouting fighters to bombers.¹⁴⁶ Kepner approved of the idea and agreed to develop the concept further.¹⁴⁷ Doolittle eventually made it a standard operating procedure for a formation of fighters to assess weather conditions prior to launching a mission. He assigned former bomber pilots, who understood the weather requirements for large-strike formations, to fly these missions.¹⁴⁸ Doolittle emphasized the sharing of weather information throughout the year.¹⁴⁹

As D-Day approached, Doolittle appealed for more resources to improve his command's ability to bomb through clouds. In March he sent a report to Spaatz titled "Utilization of Improved B.T.O [bombing through overcast] Equipment by Eighth Air Force."¹⁵⁰ The document highlighted the continued importance of radar-bombing, even in the

¹⁴³ Spaatz to Commanding General, Army Air Forces, letter, 14 January 1944, Spaatz's papers, Library of Congress, I-13 January 1944.

¹⁴⁴ Minutes, Commanders' Meeting, 22 March 1944, AFHRC, 2.

¹⁴⁵ Minutes, Commanders' Meeting, 22 March 1944, AFHRC, 2.

¹⁴⁶ Minutes, Commanders' Meeting, 22 March 1944, AFHRC, 3.

¹⁴⁷ In his memoirs Doolittle credits Colonel Budd Peaslee with conceiving the idea of using fighters to scout the weather. Doolittle and Glines, *I Could Never be so Lucky Again*, 357.

¹⁴⁸ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 305.

¹⁴⁹ In a 9 December 1944 Commanders' meeting, Doolittle stressed the proper utilization of scouting aircraft and the coordination of all information between the three divisions. Minutes, Commanders' meeting, 9 December 1944, AFHRC, 2.

¹⁵⁰ Lindsey L. Braxton for the Commanding General to Commanding General, USSAFE, letter, 22 March 1944, Spaatz papers, I-13, April 1944, Library of Congress.

coming summer months. Doolittle contended, however, that a shortage of H2X aircraft, inadequate training, and the inherent inaccuracy of radar-bombing limited the tactic's effectiveness. He therefore requested an additional 54 radar-equipped heavy bombers, an H2X ground-training system to facilitate the preparation of navigators, and "improved radar bombing equipment" to improve radar accuracy.¹⁵¹ Spaatz concurred and forwarded Doolittle's requests to Arnold with a strong endorsement.¹⁵² Doolittle also sought assistance from the British, and in March he arranged the delivery of 102 more Mosquito aircraft to expand the H2X training program.¹⁵³

Doolittle also pushed his subordinates to improve radar-bombing capability. He opened an April commanders' meeting by stating, "we must increase our effectiveness in the use of [H2X]."¹⁵⁴ The ensuing staff coordination reflects Doolittle's interest in H2X operations. First, Doolittle tasked his deputy to "find out how many additional navs [navigators] need to put two (Mickey and DR [dead reckoning]) in each pathfinder."¹⁵⁵ Additionally, Doolittle ensured that his subordinates were familiar with H2X operations. He told Partridge "I want every Div, Wing, and Group C.O. to go up on an H2X practice flight and see what the instrument shows... Then I want Div, Wing, and Group Ops, Execs, and finally all leaders. (I feel that there is insufficient 'first hand' info – all the way down the command on the possibilities and limitations of H2X)"¹⁵⁶ Doolittle's attention to radar-bombing was clearly heeded. As a result of Doolittle's prodding, in April "a good deal of emphasis was placed upon furthering the H2X training program."¹⁵⁷

¹⁵¹ Lindsey L. Braxton for the Commanding General to Commanding General, USSAFE, letter, 22 March 1944, Spaatz papers, I-13 April 1944, Library of Congress.

¹⁵² Spaatz to Arnold, letter, no date, Spaatz papers, I-13, April 1944, Library of Congress.

¹⁵³ History, Headquarters Eighth Air Force, 1-31 March 1944, vol. 1, 66.

¹⁵⁴ Minutes, Commanders' Meeting, 6 April 1944, AFHRC, 1.

¹⁵⁵ Doolittle to Partridge, handwritten note, (no date), Spaatz papers, I-13, April 1944, Library of Congress.

¹⁵⁶ Doolittle to Partridge, handwritten note, (no date), Spaatz papers, I-13, April 1944, Library of Congress.

¹⁵⁷ History, Headquarters Eighth Air Force, 1-30 April 1944, vol. 1, AFHRC, 47.

The Eighth's focus on H2X operations proved important during the bombing campaign leading up to D-Day. Railroad marshaling yards became frequent targets for the Eighth and they proved to be easy to identify on radar. Doolittle also anticipated the possibility of having to drop bombs through the weather on the day of the invasion. He prepared for this contingency by sending his forces to bomb coastal targets in the weeks leading up to D-Day.¹⁵⁸ Doolittle's instinct was accurate. On June 6 1,083 Eighth Air Force bombers dropped 2,944 tons of bombs through an overcast cloud layer against targets on the beaches of Normandy. Although the accuracy of the H2X was sufficient to avoid fratricide, delayed release points beyond the coastline, ultimately sanctioned by Eisenhower, seriously degraded the effectiveness of these missions.¹⁵⁹

In some respects, Doolittle's efforts to overcome the limitations of European weather can be considered a disappointment. Blind bombing never achieved the accuracy of visual bombardment. Over half of the blind-bombing missions were assessed as "near failures or worse."¹⁶⁰ Further studies concluded that the circular error of probability of H2X bombings exceeded two miles. And although the Eighth and Fifteenth Air Force used identical H2X equipment, the latter's accuracy was twice the former's. Official Air Force historians speculated this disparity was due to a more comprehensive training program of pathfinder crews in the Fifteenth Air Force.¹⁶¹ While a comparative analysis of the two air forces is beyond the scope of this study, this evidence suggests that, despite Doolittle's efforts, the Eighth did not fully exploit the technical effectiveness of H2X. Furthermore, Doolittle's demand for improved radar systems was not realized in time to enhance bombing accuracy in

¹⁵⁸ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 169-170.

¹⁵⁹ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 190.

¹⁶⁰ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 667.

¹⁶¹ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 723.

the European theater. The technical innovation necessary simply required too much time to develop.

Nevertheless, Doolittle's emphasis was well placed. Complementing daylight precision bombing with extensive H2X operations enabled the Eighth to maintain pressure on the Luftwaffe and German economy despite marginal weather conditions. Although strikes targeted with radar were less precise than visual bombing, the technology provided more opportunities to attrite the Luftwaffe.¹⁶² Indeed, Galland later commented that intercepting the American bomber formations in "the most difficult weather conditions" resulted in "high losses." The Commander of the German fighter force concluded "the effect on the fighting force and operational strength of the German fighter arm" from the H2X missions "was serious."¹⁶³ Moreover, by the end of 1944, Doolittle's and Spaatz's requests for more H2X systems were fulfilled, and 78 percent of the Eighth's bomb groups were equipped with two H2X crews.¹⁶⁴ This capability significantly increased the Eighth's mission-effectiveness rate during the winter of 1944-1945. During the last quarter of 1944, 80 percent of Eighth Air Force missions used a blind-bombing technique.¹⁶⁵ Likewise, in the first two weeks of February 1945, a vast majority of missions also used radar-bombing techniques. Accordingly, the number of heavy-bomber missions declared non-effective due to weather dropped from a peak of 9,345 in the second quarter of 1944 to 982 in the first quarter of 1945.¹⁶⁶ This increase in efficiency is even more impressive considering Doolittle launched 7,541 more missions in latter period compared to the former.¹⁶⁷ Despite the

¹⁶² Davis, *Carl A. Spaatz*, 296-298.

¹⁶³ Galland, *The First and the Last*, 259-260.

¹⁶⁴ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 666.

¹⁶⁵ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 667.

¹⁶⁶ *Army Air Forces Statistical Digest: World War II* (Washington, DC: Office of Statistical Control, 1945), 232, Table 130.

¹⁶⁷ The Eighth Air Force flew 63,214 heavy bomber combat sorties in the second quarter of 1944 and 70,755 combat missions in the first quarter of 1945. *Army Air Forces Statistical Digest*, 221 Table 119.

relative inaccuracy of radar-bombing, the sheer volume of bombs helped deplete German oil and aircraft production while also hindering the nation's faltering transportation system. Because of the sustained bombardment, historian John E. Fagg concluded by the end of February 1944, "Nazi Germany was no longer an industrial nation."¹⁶⁸ Similarly, Richard Davis argued that H2X's "contribution to the weight of the U.S. bombing effort in 1944-1945 was second only to the success of the U.S. long-range fighter escorts in preserving the bombers themselves."¹⁶⁹ In other words, Doolittle's efforts to spur innovation may be considered a tactical failure, but in the air war of attrition they contributed noticeably to strategic success.

Conclusions

Assessing Doolittle's ability to innovate in the Eighth Air Force provides several insights into his performance as a commander. First, Doolittle's propensity for offensive action and strong moral courage helped spur a tactical innovation. Solid documentary evidence supports the widespread notion that he "let the fighters loose" to pursue the Luftwaffe. Although Doolittle was not the only individual with these beliefs, his pivotal role in this innovative tactic cannot be discounted. His involvement in bomber tactics also enhanced the discipline and execution of the Eighth's striking formations. The first move countered official air doctrine and many opinions in his command. Mounting losses in February and March of 1944 cast further doubt on the tactics. Nevertheless, demonstrating strong moral fortitude, Doolittle remained steadfast; his determination hastened the destruction of the Luftwaffe.

Doolittle's ability to innovate technically was less successful. His strong engineering expertise helped identify aircraft technical problems and determine potential solutions. Many of his suggestions, however,

¹⁶⁸ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 728.

¹⁶⁹ Davis, *Carl A. Spaatz*, 297.

could not be realized in time to enhance air operations in the European theater. Simply put, at the scale of a numbered air force, Doolittle could not replicate the level of technical innovation that had brought him success during his transcontinental flights and the raid on Tokyo. His impatience for aircraft modification reflects both an aggressive spirit and a lack of appreciation for the scale of change required in very large organizations. To his credit, however, Doolittle sought the wisdom of his experienced superior, Carl Spaatz, to moderate his more intemperate requests. This self-awareness and growing political savvy reflect his continued growth as a general officer.

A slightly different reality comes through in Doolittle's attempts to innovate in ways that blended technology and tactics. Doolittle's efforts to improve the accuracy of radar-bombing did not achieve a great degree of tactical success. The advanced technology he requested did not mature in time to produce a significant effect. His efforts to improve training, although helpful, also failed to produce breakthrough results. Nevertheless, his strong and persistent emphasis on radar-bombing did increase the capacity of the Eighth Air Force to strike Germany in inclement weather. Here Doolittle appears to have instinctively grasped that an increase in the magnitude of relatively inaccurate bombing would be more effective than striking fewer targets with greater accuracy. And here too, Doolittle was more interested in results than in adhering to doctrine.¹⁷⁰

This analysis suggests that a senior leader educated as a trained engineer can have a considerable influence on promoting technical innovation. In wartime, however, these attributes may not produce a strategic effect. Nevertheless, a leader's ability to spur tactical

¹⁷⁰ Doolittle's emphasis on H2X bombing also reflects a de-emphasis on strategic bombing doctrine and, in practice, closely resembled the RAF bombing concept. Doolittle acknowledged this reality and in his autobiography remarked that towards the end of the war, the British and American approaches to bombing "made little practical difference." Doolittle and Glines, *I Could Never be so Lucky Again*, 349

innovation can have significant, positive effects on combat operations. Although this skill requires an intellectual element, it also demands qualities of character and temperament such as moral courage and an offensive spirit. In short, the lessons that helped Doolittle innovate most effectively were perhaps learned in the boxing ring as much as they were in an MIT classroom.



Chapter 4

Leading the Mighty Eighth

Lord Moran defined military leadership as “the capacity to frame plans which will succeed and the faculty of persuading others to carry them out in the face of death.”¹ The previous two chapters explored the first element of Moran’s dictum by evaluating Doolittle’s operational effectiveness and capacity to innovate. This chapter addresses the latter part of Moran’s proposition. As commander of the Eighth Air Force, Lieutenant General James Doolittle lost over 4,400 heavy bombers.² Indeed, at the time, heavy-bomber missions in the Mighty Eighth were considered “the most hazardous military operations which have been conducted over a sustained period.”³

How well did Doolittle persuade his men to carry out his orders in the face of such danger? One must begin by assessing the command environment in which Doolittle operated and identifying specific leadership challenges he faced in the Eighth Air Force. How did Doolittle navigate these challenges through relationships with his immediate subordinates? Likewise, how effective was Doolittle in persuading his superiors as to the wisdom of his various initiatives? How successful was Doolittle at developing and maintaining relationships in the crucible of combat? Although not related to Moran’s definition, this attribute is an important but often neglected aspect of leadership. Finally, given the devastating losses in the air, what measures did Doolittle take to sustain

¹ Lord Moran, *The Anatomy of Courage*, 2nd ed. (London: Constable, 1966), 180.

² *Army Air Forces Statistical Digest: World War II* (Washington, DC: Office of Statistical Control, 1945), 255, Table 159.

³ Quoted in Mark K. Wells, *Courage and Air Warfare: The Allied Aircrew Experience in the Second World War* (Essex, England: Routledge, 1995), 101. German U-Boat missions are now generally acknowledged as the most dangerous operations in World War II. Nevertheless, in 1944 bomber operations in Europe were widely considered the most hazardous of any mission in the Army.

the morale and military spirit of his command and how effective where they?

Command Environment

When Doolittle assumed command of the Eighth Air Force, he encountered many leadership challenges. Having replaced a very popular commander, Lieutenant General Ira Eaker, was perhaps the first. Eaker had served in the Eighth Air Force since its inception, having led the Eighth's first independent attack against marshaling yards at Sotteville-les-Rouen on August 17, 1942.⁴ Eaker had nurtured the Eighth from a nascent force. Understandably, Eaker held a deep affection for his subordinates in the Eighth and his British counterparts. The feelings were mutual. Because Doolittle brought only his deputy commander, Brigadier General Earle "Pat" Partridge, and his personal aide from the Fifteenth Air Force, he had to earn the respect of his new staff.⁵ In a letter of January 20 to Joe, Doolittle remarked: "Miss the old gang and their knowledge of my policies and methods. Miss particularly the confidence that they always indicated in me."⁶ He further confessed, "I'm faced with the job that any new commander has when assuming a new command – selling himself. After selling Doolittle, peddling his ideas will be easy."⁷ Doolittle also had to win the confidence of the British. Air Chief Marshal Charles Portal, Chief of the Air Staff, attempted to persuade Arnold to retain Eaker in England writing: "To move him now that we approach the climax of the air war over western Germany would be a grave mistake. I therefore greatly hope that when the final decision

⁴ Robin Neillands, *The Bomber War: The Allied Air Offensive Against Nazi Germany*, (New York: Overlook Press, 2001), 179.

⁵ James Doolittle to Joe Doolittle, written letter, 20 January 1944, Doolittle Papers, Series IX, Box 64, Folder 23, McDermott Library.

⁶ James Doolittle to Joe Doolittle, written letter, 20 January 1944, Doolittle Papers, Series IX, Box 64, Folder 23, McDermott Library.

⁷ James Doolittle to Joe Doolittle, written letter, 20 January 1944, Doolittle Papers, Series IX, Box 64, Folder 23, McDermott Library.

is made you will feel able to leave Eaker here.”⁸ Similarly, during Doolittle’s ceremonial meeting with King George the IV on February 4, the monarch remarked, “We’re certainly sorry to lose Eaker!”⁹ Doolittle even received a cool reception from his British counterpart, Air Chief Marshal Arthur Harris.¹⁰

Because of the strategic importance of the Eighth Air Force’s mission, Doolittle had little control over the prioritization of targets for the Combined Bomber Offensive (CBO). The strategic focus of the campaign was arbitrated through a discourse between Doolittle’s military and political superiors. The resultant priorities of the CBO were, in turn, formalized in the strategic-air directive issued by Tedder. USSTAF headquarters, under the tutelage of Spaatz, translated this directive into a campaign plan and issued the Eighth Air Force an approved target list. This arrangement required Doolittle to employ his forces in a manner he sometimes considered inefficient. For example, during the famous “oil versus transportation” debate of 1944, Doolittle committed a significant numbers of heavy bomber sorties to the French railway system. Unlike raids against German industry, these targets did not degrade aircraft production or generate a significant level of German fighter resistance. Moreover, due to the perceived threat posed by the German long-range weapons program, Tedder frequently elevated the status of Crossbow, the effort to counter German vengeance weapons, to the highest priority of the CBO.¹¹ These strategically important, but to Doolittle diversionary, missions further reduced the resources he could marshal against the

⁸ Quoted in Davis, *Carl A. Spaatz and the Air War in Europe* (Washington, DC: Center for Air Force History, 1993), 276.

⁹ Quoted in James H. Doolittle with Carroll V. Glines, *I Could Never Be So Lucky Again* (New York: Bantam Books, 1992), 350.

¹⁰ Buckingham Palace to Doolittle, letter, 25 January 1944, Doolittle Papers, Box 19, Special Correspondence, Library of Congress; Doolittle and Glines, *I Could Never Be So Lucky*, 350.

¹¹ Operation Crossbow targeted all phases of Germany’s long-range weapons program. A majority of the Eighth’s Crossbow targets were small launch and transportation facilities. Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II*, vol. 3, *Europe: Argument to VE Day, January 1944 to May 1945* (1949; new imprint, Washington, DC: Office of Air Force History, 1983), 85, 103.

German Luftwaffe.¹² These missions not only detracted from the Eighth Air Force's quest for air superiority over Europe, but also, as discussed later in this chapter, diminished the morale of its men.

The large size of the Eighth Air Force limited Doolittle's ability to inspire his men through personal interaction. In his previous command positions, Doolittle went to great lengths to connect with his subordinates. During the preparation for the strike on Tokyo, he established a close personal relationship each of his fellow raiders. Following the mission, Doolittle wrote to every man's family. Similarly, in North Africa, he maintained continual interaction with the aircrew by visiting the bases and flying combat missions. He also sent letters to the next of kin of each service member killed in his command. When he assumed command of the Eighth Air Force, however, these practices were no longer feasible. He lamented in a letter to Joe, "Since coming here I am afraid I have had to stop some of the things I did below due to the size of this Command... There just aren't enough hours in the day for me to accomplish this and all the other jobs too."¹³

The increased command responsibilities also prevented Doolittle from leading his men in the air. In North Africa Doolittle regularly flew combat missions, and his units benefited from the inspiration of their commander, who possessed more flight hours than any other general officer in the AAF.¹⁴ In England, however, his new position entitled him access to Ultra, the code-breaking program that deciphered German Enigma messages. Because of the sensitivity of this program, Spaatz could not risk Doolittle's capture. Thus, Doolittle could no longer fly

¹² From December 1943 to June 1944, Crossbow requirements diverted 17,600 tons of ordnance and 5,950 sorties from Operation Pointblank. Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 105.

¹³ James Doolittle to Joe Doolittle, hand-written letter, 9 March 1944, Doolittle Papers, Series IX, Box 64, Folder 23, McDermott Library.

¹⁴ By November 1942, Doolittle had logged 7,702 total flight hours. Ira Eaker was a close second with 7,400 hours. Spaatz and Arnold both had fewer than 5,000 hours. Wyard to Weber, teletype message "Attn: Capt. Smith," 27 November 1942, James H. Doolittle Papers, Box 15, Folder 111, Library of Congress

combat missions. Moreover, the increased administrative duties reduced his opportunity to fly in training sorties. During the first six months of 1944 Doolittle logged 59 hours and 25 minutes of flight time. In contrast, he had accumulated 109 hours and 55 minutes in the last three months of 1943.¹⁵ The reduction in flight time concerned him. In April, as his bomber losses reached their peak, he confided to Joe: "One of the restrictions of this job is that I don't get as much flying anymore. Used to get a lot in the Mediterranean but not here.... In any case it looks like the hour a day average that I've flown for the last twenty-six years goes in the discard from now on. A certain amount of prestige and flying confidence goes with it."¹⁶

These concerns were justified because Airmen expected their commanders to lead by example.¹⁷ Successful officers in the Eighth Air Force typically possessed a certain level of aviation competence.¹⁸ Leaders who failed to exhibit proficiency in the air frequently failed in their command responsibilities. Junior Airmen criticized their shortcomings and undermined their credibility using deprecating terms such as "weak sisters."¹⁹ Moreover, subordinates expected their commanders to demonstrate courage. Commanders who failed to accompany their men in combat risked losing the loyalty of their subordinates.

Doolittle, however, was no ordinary commander. He benefited from a reputation as a skilled pilot and decorated war hero. Furthermore, Doolittle's aerial accomplishments of the 1920s and 30s made him one of the most famous men in all of aviation. The daring raid on Tokyo, which

¹⁵ Logbook Entries, November 1943 – June 1944, Doolittle Papers, Series XVI, Box 1, McDermott Library.

¹⁶ James Doolittle to Joe Doolittle, hand-written letter, 15 April 1944, Doolittle Papers, Series IX, Box 64, Folder 23, McDermott Library.

¹⁷ Mark K. Wells, *Courage and Air Warfare: the Allied Aircrew Experience in the Second World War* (Essex, England: Routledge, 1995), 138.

¹⁸ Wells, *Courage and Air Warfare*, 140.

¹⁹ Wells, *Courage and Air Warfare*, 140.

earned him the Congressional Medal of Honor, reinforced his standing as a brave and skillful aviator. These credentials provided him a valuable cachet of respect with men of all ranks under his command.²⁰ Doolittle was not above fostering this image to inspire his men with an occasional flash of showmanship. One account describes Doolittle delivering a speech to a bomber group to commemorate its 200th mission. Following the stirring oratory, Doolittle strode from the stage to a waiting P-51. The 3,600-man crowd watched as he took off, performed a low pass over the field, followed by slow roll, and then departed into the horizon. Although Doolittle never accompanied his men on strikes against Germany, few would question the aerial competence or courage of their new commander.

Nevertheless, rhetoric and bravado were not sufficient means with which to lead the men of the Eighth Air Force. Because the Army Air Forces were rapidly expanded in World War II, most officers and enlisted men were not career Airmen. Therefore, given the harsh and dangerous environment of World War II strategic bombing, successful leaders in the Eighth could not simply resort to military tradition and authority as motivational tools. These Airmen demanded engagement and explanation from their superiors. In other words, they “wanted to know what they were doing, and why.”²¹ To succeed as commander of the Eighth Air Force, Doolittle had to convince his men that his orders made sense and that the risks he made them take were worth taking. The question at hand is how well did he do so?

Leadership Style

When Doolittle assumed command of the Eighth Air Force, he relied on the leadership techniques he had learned during his previous assignments. As in North Africa, he trusted his staff to manage the day-

²⁰ Major General Ramsay D. Potts, “Reminiscences: Doolittle and the Mighty Eighth,” *Airpower History*, 40 no. 4, (Winter 1993), 28.

²¹ Wells, *Courage and Air Warfare*, 146.

to-day operations in the Eighth's headquarters. For example, he delegated a large portion of detailed planning to his deputy for operations, Brigadier General Orvil Anderson.²² Doolittle also placed a great degree of confidence in the judgment of his immediate subordinates. He dispatched Partridge on an assignment to the Pentagon with the charge, "whatever you decide on the spot, put my name on it, and that's that."²³ Additionally, a review of Eighth Air Force commanders' meetings minutes reveals that Doolittle seldom made a significant policy change without consulting his junior commanders.

Doolittle did, however, reserve certain matters to himself. Among these were responding to specific requests from his superior commanders.²⁴ Doolittle used these interactions to influence the conduct of the air operations in Europe. For example, during the "oil versus transportation" debate, Doolittle expressed solidarity with his immediate superior, Carl Spaatz. Doolittle supported Spaatz's opposition to the transportation plan noting, "I most heartily concur in the analysis on the transportation targets. Not only are the critical points too numerous, but the damage done is easily repaired and therefore is of only temporary value."²⁵

In another instance, Doolittle used his command influence to shape the execution of Operation Crossbow. In June Doolittle successfully alleviated some of the operational demands of Crossbow by insisting that his forces strike only targets confirmed by aerial reconnaissance. His position, supported by Harris, persuaded the British authorities to endorse a plan allowing the Eighth to strike oil

²² Potts, "Doolittle and the Mighty Eighth," 28.

²³ Gen Earle Partridge, Interview by Tom Strum and Hugh N. Ahmann, 23-25 April 1974, USAF Oral History Collection, AFHRC call no. K239.0512-729 C.1, 350.

²⁴ Potts, "Doolittle and the Mighty Eighth."

²⁵ Doolittle to Spaatz, letter, 11 March 1944, Doolittle Papers, Box 19, 1944 operational records, Library of Congress.

depots rather than German V-1 launch facilities.²⁶ Later in the war, Doolittle resisted demands to strike German Crossbow targets on at least two occasions. On August 15 Doolittle planned a mission to attack industrial targets near Leipzig. When Tedder asked why Crossbow missions were not scheduled, in accordance with the bombing directives, Doolittle retorted that no suitable targets existed near Leipzig. Likewise, on August 18, Doolittle justified committing the bulk of his forces against targets in France, rather than Crossbow, by stating that he considered the former to be more important.²⁷ Doolittle's arguments on these two instances were apparently persuasive, as the record provides no indication of significant objection from Tedder.²⁸

When Arnold attempted to intervene in the Eighth Air Force's management of its fighter pilots as a result of two incidents in the Pacific, Doolittle also demonstrated an ability to persuade his superiors in Washington. Over the span of three days in March 1944, Lieutenant General Kenney lost two of his top-scoring aces, Colonel Neel Kearby and Captain Thomas Lynch. Arnold worried that the ensuing publicity would undermine public opinion and degrade pilot morale.²⁹ Arnold, therefore, asked Kenney to reconsider exposing high-scoring aces to the dangers of combat. Arnold wrote "I do very insistently want you to weigh very carefully the potential value of your heroes."³⁰ Moreover, Arnold was "deeply concerned" over a statistic that revealed all aces in the Pacific were flight commanders or higher.³¹ He believed this reflected a tendency for flight leads to accrue enemy kills at the expense of wingmen

²⁶ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 529-530.

²⁷ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 536-537.

²⁸ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 536-537.

²⁹ Thomas E. Griffith Jr, *MacArthur's Airman: General George C. Kenney and the War in the Southwest Pacific* (Lawrence, Kan.: University Press of Kansas, 1998), 221.

³⁰ Arnold to Kenney, letter, 20 March 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

³¹ Arnold to Kenney, letter, 20 March 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

and overall unit effectiveness. Arnold sent Doolittle a copy the letter, pointedly noting “I believe you should be aware of my line of thought, and I would very much like to have your ideas on the subject.”³²

Before formulating the response to Arnold’s letter, Doolittle sought the advice of his subordinates. Doolittle forwarded a copy of Arnold’s correspondence to Kepner and requested his thoughts on the matter.³³ In a detailed letter of March 29, Kepner defended the Eighth Air Force’s management of fighter aces. The leader of VIII Fighter Command argued that because his organization encouraged aggressiveness, assertive pilots emerged as flight leaders. Kepner maintained that he assigned aces to leadership positions in order to foster an aggressive spirit throughout the command, not to increase individual combat records. Kepner substantiated his argument by citing VIII Fighter Command combat statics for March 1944. Over 51 percent of enemy kills were claimed by wingmen, not flight leaders.³⁴

Armed with Kepner’s evidence, Doolittle gently rebuffed Arnold’s suggestion that high-scoring fighter pilots should return to the Zone of the Interior. In a letter of April 1, Doolittle noted that his command sought the destruction of the enemy by developing a “high overall efficiency based primarily on teamwork.”³⁵ Although the Eighth stressed unit records over individual achievement, Doolittle acknowledged that heroes inevitably emerged. Doolittle explained that he assigned these men “to improve teamwork and to raise the effectiveness of all the fighter pilots.”³⁶ An unfortunate, but necessary, consequence was that “some

³² Arnold to Kenney, letter, 20 March 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

³³ Doolittle to Kepner, letter, no date, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

³⁴ Kepner to Doolittle, letter, 29 March 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

³⁵ Doolittle to Arnold, letter, 1 April 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

³⁶ Doolittle to Arnold, letter, 1 April 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

leaders will therefore inevitably be killed.”³⁷ Doolittle ended his response by cautioning that an increase in strafing operations would likely result in the loss of more aces. He closed with: “In ground strafing individual skill does not give immunity from enemy fire to the same degree that it does in air combat and, as these attacks must be properly led, especially if large, some leaders will be lost.”³⁸ Doolittle’s detailed response assuaged Arnold’s concerns, and aces in the Eighth Air Force continued to fly combat sorties. His closing words, however, were prophetic. By the end of the war, 10 of 25 Eighth Air Force aces had ascended to group or squadron command, and 9 of these leaders were lost in combat. Moreover, antiaircraft artillery downed all but one of the aces lost in Europe.³⁹

Doolittle’s leadership style suited his command environment. His interactive instincts offset his administrative weakness by utilizing the strengths of his subordinates. This leadership approach also strengthened Doolittle’s relationships with his colleagues. Major General Ramsay D. Potts, who served as the Eighth’s Director of Bomber Operations, argued: “Doolittle was the ideal Commander of the Eighth Air Force.”⁴⁰ Likewise, Partridge later remarked: “I liked Doolittle the first minute I saw him... You don’t get a boss like that very often.”⁴¹ Doolittle also quickly earned the admiration of his British counterparts.⁴² The strength of these relationships is reflected in their enduring nature. For instance, following the war, Spaatz relied on Doolittle’s expertise in standing up the new Air Force.⁴³ Likewise, Doolittle remained personally

³⁷ Doolittle to Arnold, letter, 1 April 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

³⁸ Doolittle to Arnold, letter, 1 April 1944, Doolittle Papers, Box 19, 1944 Operational Records Library of Congress.

³⁹ Wells, *Courage and Air Warfare*, 45.

⁴⁰ Potts “Doolittle and the Mighty Eighth.”

⁴¹ Partridge, Interview by Strum and Ahmann, 23-25 April 1974, 350.

⁴² Doolittle and Glines, *I Could Never Be So Lucky*, 351.

⁴³ Spaatz to Doolittle, letter, 15 July 1947, James H. Doolittle Papers, Box 28, Folder 167, Library of Congress.

and professionally close with Partridge and Anderson long after their mutual assignments in the Eighth. Similarly, as discussed in a subsequent chapter, Doolittle sustained a close friendship with his former subordinate in the Twelfth Air Force, Hoyt Vandenberg. While in the Eighth Air Force, Doolittle successfully used these relationships and convincing appeals to mitigate restrictions to his command environment. The ability to persuade his superiors provided Doolittle wider latitude to employ his forces as he saw fit.

Military Spirit in the Eighth Air Force

A force's military spirit is an important element of combat effectiveness. Napoleon famously remarked that, "in war, the moral is to the physical as three is to one."⁴⁴ Clausewitz agreed stating, "the moral elements are among the most important in war."⁴⁵ *On War* asserts that "military spirit" as one of the principal moral elements and cautions that its absence often leads to outcomes that "fall short of the efforts expended."⁴⁶ This reality also extends to the realm of air combat. The official Air Force history of World War II used the term "morale" to describe this intangible quality: "[Morale] denotes an attitude of mind which, when favorable, leads to the willing performance of duty under all conditions, good or bad, and which when unfavorable, leads to the unwilling or poor performance, even perhaps to non-performance, of duty under the same good or bad conditions."⁴⁷ Doolittle agreed with this assessment. In March he told his subordinate commanders that morale directly influenced combat effectiveness.⁴⁸ Doolittle attributed low morale to a myriad of operational deficiencies, including poor bombing accuracy, excessive abort rates, defection of aircrew to neutral countries,

⁴⁴ David G. Chandler, *The Campaigns of Napoleon: The mind and Method of History's Greatest Soldier, Volume I*. (New York: Simon and Schuster, 1966), 155.

⁴⁵ Carl von Clausewitz, *On War*, Reprint ed. (Princeton: Princeton University Press, 1989), 188.

⁴⁶ Clausewitz, *On War*, 189.

⁴⁷ Quoted in Wells, *Courage and Air Warfare*, 89.

⁴⁸ Minutes, Commanders' Meeting, 22 March 1944, AFHRC call no. 520.01 V.2, 2.

and emotional casualties.⁴⁹ Clausewitz, however, aptly noted that: “We should take care never to confuse the real spirit of an army with its mood.”⁵⁰ The latter is transitory; the former a steadfast determination to triumph. The failure to discern the difference frequently results in leadership problems, not solutions.

Leadership is generally recognized as a critical element in sustaining the military spirit of a fighting unit. This reality was universally acknowledged in World War II.⁵¹ Thus, it is appropriate to consider what Doolittle did that either contributed positively to this quality or detracted from it.

The Eighth Air Force experienced a decline in morale soon after Doolittle assumed command. Morale typically suffers when men begin to doubt their chances of surviving the war.⁵² An Eighth Air Force study conducted in February of 1944 confirmed this reality by discovering a correlation between decreased morale and increased attrition rates.⁵³ As previously noted, the Eighth’s morale, especially among its bomber crews, waned when Doolittle extended the operational tour length to 30 missions. The math was simple. “Barrack room accountants” figured that, with a historic attrition rate of 5 percent, only 277 of 1,000 men would survive a combat tour of 25 missions.⁵⁴ When Doolittle increased the requirement to 30, the number dropped to 215; and a subsequent tour length of 35 missions implied that only 165 men would ever see their families again.⁵⁵ Consequently, resentment of Doolittle simmered among many who felt that Doolittle’s policy-change violated their “contract.”⁵⁶ Doolittle’s modification of fighter-escort tactics did not help

⁴⁹ Minutes, Commanders’ Meeting, 22 March 1944, AFHRC, 2.

⁵⁰ Clausewitz, *On War*, 189.

⁵¹ Wells, *Courage and Air Warfare*, 137.

⁵² Wells, *Courage and Air Warfare*, 102.

⁵³ Wells, *Courage and Air Warfare*, 102.

⁵⁴ Wells, *Courage and Air Warfare*, 101, 104.

⁵⁵ Wells, *Courage and Air Warfare*, 101.

⁵⁶ Wells, *Courage and Air Warfare*, 104.

matters. As discussed in a previous chapter, many bomber crews felt this change unnecessarily exposed them to enemy fighters.

The decline in morale was not unexpected. In the beginning of 1944, Doolittle anticipated attrition rates would increase when he instituted attritional warfare and “let the fighters loose.”⁵⁷ Moreover, in a letter of February 17, he informed his commanders that the extension of combat tours “might well have a serious effect on morale.”⁵⁸ Arnold also feared that lengthening operational tours would damage the Eighth’s military spirit. In his letter of February 11, he cautioned: “this radical change in Personnel Policy will present difficult problems, particularly insofar as morale is concerned. It will be a challenge to and a very great test of personal leadership all the way down the line... I have absolute faith also in the intelligence and good, hard, common sense of the American fighting man in understanding the necessity for the change and accepting it. I know I can count on you.”⁵⁹

Like Arnold, Doolittle believed in his men’s judgment and appealed to their intellect as a means of improving morale. He opened his March 2 commanders’ meeting by emphasizing the importance of keeping ground crews and other non-combat personnel informed on the progress of the war.⁶⁰ Similarly, later that month he reminded his commanders that, “they are dealing with intelligent men. They should have explained to them what we are doing and why we are doing it.”⁶¹ There was considerable wisdom in Doolittle’s words. Surveys of aircrews showed a direct link between a belief in the value of strategic bombing and combat effectiveness.⁶² In March, the intelligence directorate (A-2) of Doolittle’s

⁵⁷ Minutes, Commanders’ Meeting 2 March 1944, AFHRC call no. 520.01 V.2, 3.

⁵⁸ Doolittle to VIII Fighter Command and all Bombardment Divisions, letter, 17 February 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

⁵⁹ Arnold to Doolittle, letter, 11 February 1944, Spaatz’s Papers, File I-90, Library of Congress.

⁶⁰ Minutes, Commanders’ Meeting 2 March 1944, AFHRC, 1.

⁶¹ Minutes, Commanders’ Meeting 22 March 1944, AFHRC, 2.

⁶² The crews that believed strongly in the value of strategic bombing reported more target damage than those that did not appreciate the worth of the missions to Germany. Wells, *Courage and Air Warfare*, 98.

staff began publishing a monthly report to inform aircrew on the progress of the air campaign. The report included the number of German aircraft destroyed, the effect of air operations on the enemy's strength, and "other items that would be of value for the crews to know."⁶³

The manner in which Doolittle announced the increasing of combat tours to 30 missions also reflects this mentality. In a memorandum of March 4 to his division commanders he included a lengthy excerpt from Arnold's February 11 letter directing the service-wide extension of combat tours:

A dangerous corollary had grown up.... That is that the completion of one operational tour means that combat crews will not subsequently be sent back to an active theater of war. Some men are coming home with that idea, and some of the trainees and replacement crews ready to go for their first time have already picked it up. It is again beyond reason that a trained fighting man, seasoned, rested, and able, should be consigned to a permanent homeland job because he has once already been in combat. This wrong impression must be unmistakably corrected. *Experienced combat personnel are a vital asset in winning this war, and they have got to be used as needs dictate.*⁶⁴

Doolittle noted that the increase of combat tours was not unique to the Eighth Air Force, but instead, was in response to a service-wide shortage of aircrews. Airmen in all AAF commands were sharing in this burden. He further explained that the Eighth Air Force loss rate had declined appreciably. He supported his argument with a statistical summary of Eighth Air Force operations from August 1942 to February 1944.⁶⁵ The numbers showed a significant decrease in combat attrition. Doolittle closed with: "This substantial decline, in great degree, is due to the

⁶³ Minutes, Commanders' Meeting 22 March 1944, AFHRC, 3.

⁶⁴ Emphasis added. Arnold to Doolittle, letter, 11 February 1944, Spaatz's Papers, File I-90, Library of Congress.

⁶⁵ Doolittle to VIII Composite Command and Bombardment Divisions, letter, 4 March 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

present efficiency of our fighter escort, the constantly increasing size of the attacking bomber force, and a substantial falling off in the Hun fighter strength. It is anticipated that, in the near future, the loss rates will be further reduced as the combat strength of our forces continues to increase.”⁶⁶

Doolittle also offered his men the promise of an extended leave in the United States upon completion of an operational tour. Kepner submitted the idea during a March 2 commanders’ meeting.⁶⁷ Two days later Doolittle petitioned Arnold: “My commanders expressed the positive opinion, and I agree, that were it possible to give crew members a short period of leave within the United States, many crews would be willing and able to return thereafter to active combat operations.”⁶⁸ Much to Doolittle’s surprise, his superiors approved the proposal, and crews returned to resort locations such as Atlantic City, New Jersey; Miami Beach, Florida; and Santa Monica, California, for rest and relaxation.⁶⁹ The policy, however, did not succeed as well as Doolittle had intended. The promise of returning to combat led many crewmembers to not enjoy their month in the United States.⁷⁰ Moreover, because of discipline problems among returning Airmen, Arnold ordered Doolittle to take “immediate and adequate measures...to improve the attitude, conduct, and military bearing of AAF personnel being returned to this country.”⁷¹ Fortunately, as noted earlier, an increase in the supply of aircrews allowed Doolittle to abandon this practice by the summer of 1944. Henceforth, only lead crews, who volunteered, were returned to the

⁶⁶ Doolittle to VIII Composite Command and Bombardment Divisions, letter, 4 March 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

⁶⁷ Minutes, Commanders’ Meeting, 2 March 1944, AFHRC, 3.

⁶⁸ Doolittle to Arnold, letter, 4 March 1944, Doolittle Papers, Box 19, 1944 Operational records, Library of Congress.

⁶⁹ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 306.

⁷⁰ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 306.

⁷¹ Arnold to Doolittle, letter, 3 April 1944, Doolittle Papers, Box 19, 1944 Operational records, Library of Congress.

United States for extended leave.⁷² When a subordinate later proposed reinstituting the extended leave policy, he dismissed the idea.⁷³ Doolittle was a man who learned from his mistakes.

The Eighth Air Force's policies concerning aircrew morale did not overlook the problem of emotional casualties. The increase of combat losses led to a corresponding increase in combat exhaustion. One study revealed a direct correlation between the number of emotional casualties and the rate of attrition: one Airman was permanently grounded for battle fatigue for every two bombers that failed to return from combat.⁷⁴ During a discussion of the problem with his subordinate commanders, Doolittle emphasized the importance of flight surgeons in assessing the mental health of aircrews. He insisted that the patients receive firm, but humane, treatment. He believed flight surgeons should never "develop sympathy, but should commend when a good job is done and condemn a bad job."⁷⁵ That same month, Doolittle formally ordered his flight surgeons to account for the amount of stress endured by an individual before rendering a judgment on the strength of his character.⁷⁶ He also mitigated the detrimental effects of combat exhaustion by removing those undergoing evaluation from their units.⁷⁷ Despite the extreme hardships endured by Eighth Air Force aircrews, only one percent of Airmen in the command were permanently grounded for cowardice.⁷⁸ This suggests Doolittle's efforts limited the adverse influence of emotional casualties and helped his organization come to terms with the issue.

Doolittle also implemented measures to ensure that men who excelled in combat were promptly rewarded. Doolittle entrusted major

⁷² History, Headquarters Eighth Air Force, 1-31 July 1944, vol. 1, AFHRC call no. 520.01 V.1, 6.

⁷³ Minutes, Commanders' Meeting, 1 November 1944, AFHRC call no. 520.01 V.2, 2.

⁷⁴ Wells, *Courage and Air Warfare*, 102.

⁷⁵ Minutes, Commanders' Meeting, 22 March 1944, AFHRC, 3.

⁷⁶ Wells, *Courage and Air Warfare*, 170.

⁷⁷ Minutes, Commanders' Meeting, 6 April 1944, AFHRC call no. 520.01 V.1, 6; History, Headquarters Eighth Air Force, 1-31 April 1944, vol. 1, AFHRC call no. 520.01 V.1, 5.

⁷⁸ Wells, *Courage and Air Warfare*, 161.

generals under his command with the authority to award decorations up to and including the Distinguished Flying Cross.⁷⁹ This policy change reduced the bureaucratic delay in processing award nominations. Indeed, under Doolittle, the Eighth dispensed a plethora of awards to its deserving aircrew. Air Medals were presented for crews that finished five or six missions. In all, the Eighth Air Force awarded over 441,000 such decorations.⁸⁰ Doolittle, however, also took measures to maintain the fairness and integrity of combat medals. In April he standardized the decoration policies to preclude any perception of inequity.⁸¹ Although the policy was developed at the Eighth's headquarters, its application was left to the discretion of subordinate commanders. Therefore, before the policy was implemented, Doolittle appointed Kepner chairman of a meeting of the division commanders to "discuss their individual interpretations of existing regulations in order that their application of authority would be uniform."⁸² Moreover, Doolittle discontinued the practice of awarding a Distinguished Flying Cross for the completion of a combat tour. Instead, the decoration was reserved for an Airman who downed an enemy aircraft or for bomber crews that had endured a particularly onerous mission.⁸³

Doolittle also addressed the morale-sapping problem of frostbite. Because the air environment was extremely harsh, frostbite was a serious problem for Airmen.⁸⁴ Bomber crews operated with open windows and temperatures as low as 50 degrees below zero.⁸⁵ Fighter pilots also had to cope with the physiological effects of altitude. All pursuit aircraft lacked pressurized cabins; and because of its wing-

⁷⁹ Minutes, Commanders' Meeting, 22 March 1944, AFHRC, 3.

⁸⁰ Wells, *Courage and Air Warfare*, 152.

⁸¹ History, Headquarters Eighth Air Force, 1-31 April 1944, vol. 1, AFHRC, 5.

⁸² Minutes, Commanders' Meeting, 6 April 1944, AFHRC call no. 520.01 V.2.

⁸³ Wells, *Courage and Air Warfare*, 152.

⁸⁴ Wells, *Courage and Air Warfare*, 62.

⁸⁵ Wells, *Courage and Air Warfare*, 62. History, Headquarters Eighth Air Force, 1944-1945 vol. 2, AFHRC call no. 520.01 V.1, 50.

mounted engines, the P-38's cockpit was notoriously cold in flight. Not surprisingly, in early 1944, frostbite constituted a "major cause of casualties" in the Eighth Air Force.⁸⁶ Hypoxia (lack of oxygen), the bends (release of nitrogen from the blood caused by decreased air pressure at high altitude), and frostbite accounted for 12,200 aircrew removals in the Eighth.⁸⁷ Doolittle, therefore, paid close attention when his subordinates complained of the problem. In early February LeMay informed Doolittle that the 3rd Bomber Division lacked sufficient electrically heated flying clothing.⁸⁸ Doolittle charged Partridge to work with USSTAF to rectify the situation. A month later, however, General Williams also complained of a shortage of heated flying gear; and Kepner inquired about the status of gloves and spats for his P-38 pilots.⁸⁹ Doolittle responded that if his logistics directorate (A-4) did not obtain the equipment, he would send someone to Washington to fix the problem in person. Indeed, Doolittle soon dispatched Partridge to the Pentagon to "look into the winter flying equipment business."⁹⁰

The coordinated efforts of the Eighth Air Force's commanders reduced the problem of frostbite for aircrews. Because of Doolittle's attention to his subordinates' needs and subsequent intervention, the Eighth soon possessed an adequate supply of electrically heated flying suits. Doolittle also ordered the installation of windows to enclose waist-gunner positions and radio hatches on his heavy bombers.⁹¹ These measures reduced frostbite to a "minor cause" of casualties.⁹² A survey conducted during World War II revealed that fighting spirit was highest

⁸⁶ Colonel W.E. Musser, "Eighth Air Force Under the Command of Lt. Gen. J. H. Doolittle: Major Materiel and Maintenance Problems Encountered and Action Taken to Solve Them", no date, Doolittle Papers, Box 18, 1945 Operational records, Library of Congress.

⁸⁷ Wells, *Courage and Air Warfare*, 83 n7.

⁸⁸ Minutes, Commanders' Meeting, 8 February 1944, AFHRC call no. 520.01 V.2.

⁸⁹ Minutes, Commanders' Meeting, 2 March 1944, AFHRC, 3-4.

⁹⁰ Partridge, Interview by Strum and Ahmann, 23-25 April 1974, 350.

⁹¹ Musser, "Major Materiel and Maintenance Problems."

⁹² Musser, "Major Materiel and Maintenance Problems."

among men who believed that their commanders were sympathetic to their needs.⁹³ Doolittle knew this instinctively. He told his commanders, “he thought electronically heated suits, reduction in frostbite, spats for P-38 pilots, etc. were all items tending to increase morale.”⁹⁴ He was right.

Operations during the summer of 1944 required considerable sacrifice on the part of the Eighth Air Force. Bomber crews suffered from high casualty rates, occasional lapses in escort coverage, and a brutal pace of operations. These factors led many Airmen to the brink of exhaustion.⁹⁵ Doolittle’s extension of the combat tour length to 35 missions did not help. Moreover, the initiation of V-1 attacks against the United Kingdom in June caused the Eighth to devote more missions to Crossbow targets. In July and August, the Eighth committed 4,266 sorties and 10,891.6 tons of ordnance to the operation. These figures accounted for over 20 percent of the missions and 27 percent of the weapons dropped during the two-month period.⁹⁶ Frustratingly, the Eighth’s exertions did not reduce the rate of vengeance attacks against Britain.⁹⁷ The adverse effects of these fruitless missions on morale worried Doolittle. He told his subordinate commanders: “The problem within our organization is the effect on the morale of our personnel caused by our having to do a lot of things they may feel are not basically sound.”⁹⁸

In July 1944 a memorandum on the disposition of aircrew interned in Switzerland confirmed Doolittle’s concerns. In World War II it was an acceptable practice for critically damaged bombers, which could not return to a friendly base, to divert to a neutral country. The crews and

⁹³ Wells, *Courage and Air Warfare*, 151.

⁹⁴ Minutes, Commanders’ Meeting, 22 March 1944, AFHRC, 2.

⁹⁵ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 306.

⁹⁶ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 532.

⁹⁷ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 533.

⁹⁸ Minutes, Commanders’ Meeting, 20 July 1944, AFHRC call no. 520.01 V.2, 2.

their airplanes remained under the protection of the host government for the remainder of the war. By July 94 crews had diverted to Sweden and another 101 remained interned in Switzerland. William W. Corcoran, a consulate officer in Sweden, wrote a controversial memorandum that implied Aircrew morale was “very bad indeed.”⁹⁹ Corcoran claimed that the airmen he interviewed had intentionally diverted to avoid further combat. The Airmen also harbored resentment for Doolittle because, as Corcoran reported, the commanding general sent his men to a most certain death.¹⁰⁰ In response to Corcoran’s letter, Doolittle humbly admitted to his commanders that “there is probably some justification for some of these cases and that we must do everything possible to correct these conditions.”¹⁰¹

Doolittle, therefore, instituted additional policy changes to reduce the perceived decline in morale. He understood that a hospitable living environment could bolster morale. In March he made improving his Airmen’s facilities a “main point” in his efforts to sustain morale.¹⁰² Similarly, later in the war he emphasized that “crews must have proper amount of rest and relaxation...to insure their continued effectiveness.”¹⁰³ Correspondingly, in July, he instituted a special services program in the Eighth Air Force. This initiative provided each unit with a special services officer, who devised “ways and means to provide extra-curricular activities that would improve morale and thus forestall the development of unhealthy mental attitudes.”¹⁰⁴

Doolittle also used media to enhance morale. In the summer of 1944, he ordered the release of more information regarding the exploits

⁹⁹ Wells, *Courage and Air Warfare*, 107. Minutes, Commanders’ Meeting, 20 July 1944, AFHRC, 2.

¹⁰⁰ Wells, *Courage and Air Warfare*, 107.

¹⁰¹ Minutes, Commanders’ Meeting, 20 July 1944, AFHRC, 2.

¹⁰² Minutes, Commanders’ Meeting, 22 March 1944, AFHRC, 2.

¹⁰³ Minutes, Commanders’ Meeting, 1 November 1944, AFHRC call no. 520.01 V.2, 2.

¹⁰⁴ Minutes, Commanders’ Meeting, 20 July 1944, AFHRC, 2. History, Headquarters Eighth Air Force, 1-31 July 1944, vol. 1, AFHRC, 4-5.

of individual aircrew.¹⁰⁵ He also petitioned Spaatz to increase publicity efforts and asked that he attribute mission results to the Eighth Air Force, rather than simply to the USSTAF.¹⁰⁶ Spaatz approved the request and promised to increase public-relations endeavors.¹⁰⁷ Moreover, Doolittle invited journalists and newsmen to observe his Airmen's bravery. The crews enjoyed watching the newsreels and documentaries, even if they were at times factually inaccurate.¹⁰⁸

By the fall of 1944, the threat to operations of sinking morale had passed. In August an investigation revealed aircraft in Switzerland had diverted for legitimate reasons. The thorough inquiry dispelled Corcoran's claims of cowardice. The findings instead suggested diplomatic interrogators had misinterpreted the typical nonchalance exhibited by American aircrew. Inspection of the aircraft also revealed significant battle damage.¹⁰⁹ For example, post-war analysis revealed of the 166 bombers flown to Switzerland, only 71 were repairable. Moreover, these salvageable aircraft, on average, required 200 hours of maintenance to return to flying condition.¹¹⁰ The investigation's results inspired Spaatz to vehemently refute previous accusations of wrong doing. He wrote Arnold noting, "we resent the implications by a non-military interrogator that any of these crews are cowards, are low in morale or lack the will to fight. Such is base slander against the most courageous group of fighting men in this war."¹¹¹ Doolittle's men who diverted to Switzerland may have been relieved to be out of the war, but that did not make them cowards. Moreover, another investigation,

¹⁰⁵ History, Headquarters Eighth Air Force, 1-31 July 1944, vol. 1, AFHRC, 5.

¹⁰⁶ History, Headquarters Eighth Air Force, 1-31 July 1944, vol. 1, AFHRC, 5.

¹⁰⁷ 20 July 1944 Minutes, Commanders' Meeting, 2.

¹⁰⁸ Wells, *Courage and Air Warfare*, 151-152.

¹⁰⁹ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 307.

¹¹⁰ Wells, *Courage and Air Warfare*, 108.

¹¹¹ Quoted in Wells, *Courage and Air Warfare*, 107-108.

commissioned by Arnold, concluded in September that morale in the Eighth had increased significantly.¹¹²

Doolittle's actions to improve morale are worthy of admiration. His efforts to share the rationale behind his decisions resonated well with the men of the Eighth Air Force. Doolittle's subordinates also appreciated learning about the effects of their attacks on the enemy, whether that information came from intelligence reports or newsreels. His treatment of combat exhaustion also reflected a firm, yet humane, approach to the psychological toll of combat. The Eighth's award system also contributed to sustaining morale.¹¹³ Finally, Doolittle recognized the importance of living conditions and implemented effective measures to improve them.¹¹⁴ Doolittle's leadership ability influenced many young Airmen. Theodore Milton, a B-17 pilot in the Eighth during World War II who later became Chief of Staff, Tactical Air Command, remarked: "Doolittle impressed all of us. He had a great combination of flamboyance and common sense, which we all liked.... We all thought that he was a tremendously effective commander."¹¹⁵ Indeed, Doolittle's efforts to maintain morale were indicative of an effective leader.

Conclusion

Several noteworthy observations emerge from an evaluation of Doolittle's leadership in the Eighth Air Force. First, he encountered a demanding command environment that inhibited the influence of several of his leadership strengths. He could not rely on his personal charisma and flying ability to persuade his men to act. Nonetheless, he adopted a leadership style that accommodated these challenges. Doolittle's empowerment of his immediate subordinates earned their admiration and helped compensate for his administrative shortcomings. Moreover,

¹¹² Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 306.

¹¹³ Wells, *Courage and Air Warfare*, 153.

¹¹⁴ Wells, *Courage and Air Warfare*, 148.

¹¹⁵ Quoted in Wells, *Courage and Air Warfare*, 143.

the relationship with his subordinate commanders gave him an excellent resource for advice. Consequently, it is no surprise that many of the ideas Doolittle implemented did not originate with him but with those at lower echelons. His leadership acumen is also reflected in his relationship with his superiors. He was a loyal subordinate, but he frequently convinced his leaders to support his vision for how to employ and lead the Eighth Air Force. Doolittle had learned from his missteps in North Africa. The persuasiveness of such appeals exemplifies a leader with keen political awareness and strong interactive skills. Moreover, in the crucible of combat, Doolittle's charisma helped cultivate close connections with his colleagues that continued after the violent contest. As discussed in subsequent chapters, Doolittle's penchant for advocacy and his personal relationships had a marked impact on the new Air Force.

When considering Doolittle's influence on morale, however, one must not overlook the effect of his operational effectiveness and innovative accomplishments. As Clausewitz observed, the first means of increasing military spirit is a "series of victorious wars."¹¹⁶ In other words, there is no substitute for success. As noted previously, by the fall of 1944 the Luftwaffe's effectiveness had declined significantly. Accordingly, by September Doolittle's major challenges regarding morale had passed. Thus, Doolittle's aggressive assault on the Luftwaffe may have ultimately been his most effective means of improving morale. Fittingly, Craven and Cate's description of the Eighth's morale in September 1944 states: "Not only were the Airmen confident of their airplanes, their methods, and themselves, but they felt sure they were doing more to win the war than either the ground forces or the RAF."¹¹⁷

¹¹⁶ Clausewitz, *On War*, 189.

¹¹⁷ Craven and Cate, *Europe: Argument to VE Day*, vol. 3, 307.

Doolittle's leadership exhibits an instinctive understanding of the distinction between the mood of his forces and their military spirit. He never altered the employment of his forces in response to declining morale. As noted earlier, Doolittle remained steadfast in his operational decisions despite the darkening "mood" of his forces. He, did not, however, discount the importance of morale; and Doolittle devoted significant time and effort to enhance the well-being of his men. Perhaps the greatest testament to Doolittle's leadership is that although he extracted a great amount of effort from his men, the Mighty Eighth's military spirit never faltered.



Chapter 5

Transition to Civilian Life

The setting sun on Okinawa made for a picturesque scene. A goat stood perched precariously upon a native Japanese tomb silhouetted against a deep red sky. Lieutenant General James Doolittle took in the vista as he penned a letter home to his wife, Joe Doolittle. As the animal jumped from its perch to join the little flock, Doolittle could not help but think of his own family and the impending leap into the post-war world. Contemplating plans with Joe, he mused, “Remember we are in this for the long race together. We don’t want to wear out while the race is still to be run—and the race is for the rest of our lives.”¹

Indeed, the former air racer’s career was long from over, and Doolittle’s journey from command of the Eighth Air Force to an executive at Shell Oil was a significant transition in his life. This chapter examines Doolittle’s experiences in the closing days of World War II and his subsequent return to civilian life. What were Doolittle’s views regarding the future of air power at the end of the war? Were these his own beliefs or did he simply espouse the views of his superiors? How effective was Doolittle in shaping the debate over military unification and the creation of a separate Air Force? The chapter also explores Doolittle’s critical decision to separate from the military and return to industry. What factors drove his decision to hang up his uniform for a suit? The answers to these questions provide insight into one of the Air Force’s most prominent air power advocates.

¹ James Doolittle to Joe Doolittle, written letter, 28 July 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library, The University of Texas at Dallas.

Pacific White Space

President Harry S. Truman declared May 8, 1945 Victory in Europe (V-E) day, signaling the end of Allied combat operations in Europe. To commemorate the victory, Doolittle directed 1,500 aircraft to perform a celebratory flyover of the English countryside. The Eighth Air Force commander's residences served as a convenient rendezvous point for the operation.² Doolittle also authorized 30,000 air forces ground personnel to receive aerial tours of Germany to demonstrate appreciation for their efforts. The victorious air commander felt it was important for the supporting personnel to "see with their own eyes what they had helped to bring about."³

While celebrations were ongoing in Europe, Doolittle received word on his next assignment. General Arnold was sending Doolittle to the Pacific to lead a redeployment of the Eighth Air Force. Unlike his current fleet of B-17s and B-24s, however, B-29 Superfortresses would constitute a majority of his new force.⁴ Therefore, on May 10, 1945, Doolittle passed command of the Eighth Air Force in Europe to Major General William Kepner. Traveling with his son, James Jr., Doolittle departed England on the 15th and started the journey home.⁵ For unknown reasons, he returned home the long way, flying through Cairo, Calcutta, Clark Air Base in the Philippines, Hawaii, and finally arrived in Washington, DC on May 23.⁶

Upon returning to the United States, Doolittle promptly proceeded to Miami with Joe for some much deserved rest. He headed to California

² "1,500 Planes in Salute," *New York Times*, 13 May 1945. Retrieved from ProQuest

³ James H. Doolittle with Carroll V. Glines, *I Could Never Be So Lucky Again* (New York: Bantam Books, 1992), 406.

⁴ Doolittle and Glines, *I Could Never Be So Lucky Again*, 408.

⁵ Doolittle and Glines, *I Could Never Be So Lucky Again*, 409-410 and Lowell Thomas and Edward Jablonski, *Doolittle: A Biography* (Garden City: Doubleday, 1976): 303.

⁶ Because he lost his logbook, Doolittle tracked his flights in the front of his personal notebook. Entries listed on Monday, 1 January 1945 in personal notebook, James H. Doolittle Papers, Series XVI, McDermott Library.

on June 9, where he reunited with his former colleague from the North African Campaign, General George Patton. Fearing an increase of public apathy following V-E day, the War Department dispatched the two general officers on a speaking tour to bolster public support for combat operations in the Pacific.⁷ The famous personalities drew immense crowds. In Los Angeles, an estimated million and a half people lined the roads as the famous duo paraded to city hall.⁸ The day concluded with a spectacular event at the LA Memorial Coliseum. Jack Benny emceed the show, which included a simulated air raid and a mock tank battle. Hollywood stars Edward Robinson, Bette Davis, and Humphrey Bogart narrated the action.⁹ Before the packed stadium, Doolittle proclaimed “teamwork” between industry and the armed forces was required to win.¹⁰ The roles were simple: “You here at home must build and produce. We must deliver the blows for which you supply the power.”¹¹

While on the West Coast, Doolittle flew a B-17 to Seattle to tour a Boeing factory and meet with the employees. He also took time for a thirty-minute flight in the new B-29.¹² After spending the rest of June traveling between public appearances and factory visits, Doolittle met up with Major General Earl “Pat” Partridge and Colonel Bruce Johnson at Peterson Field in Colorado Springs. Colonel Johnson, who would become the Headquarters Squadron Commander in Okinawa, had been at work preparing the Eighth’s headquarters for the impending transfer to the

⁷ Doolittle and Glines, *I Could Never Be So Lucky Again*, 410-411.

⁸ Special to the *New York Times*, “Patton, Doolittle get Coast Ovation,” 10 June 1945. Retrieved from ProQuest.

⁹ “Coliseum tonight: Patton, Doolittle, bombers, tanks and Hollywood stars.” *Los Angeles Daily News*, 9 June 1945, James H. Doolittle Papers, Box 65, Library of Congress.

¹⁰ Remarks Prepared for Lieutenant General Doolittle, Los Angeles, 9 June 1945, Doolittle Papers, Series I, Box 2, Folder 6, McDermott Library, 2.

¹¹ General Doolittle, “two minute talk for delivery at City Hall,” Los Angeles, 9 June 1945, Doolittle Papers, Series I, Box 2, Folder 6, McDermott Library.

¹² Doolittle and Glines, *I Could Never Be So Lucky Again*, 412 and Entries listed on Friday, 5 January 1945 in personal notebook, James H. Doolittle Papers, Series XVI, McDermott Library.

Pacific.¹³ On July 1, the team, along with two crews, headed east from Colorado with Doolittle flying a B-29 and Partridge and Johnson following in a B-17 loaded with spare parts.¹⁴ After several days conferring with General Arnold, Doolittle departed Bolling Field in Washington, DC, for the Pacific. Following stops in England, Egypt, India, and Guam for a short visit with Commanding General of the Fifth Air Force, George Kenney, Doolittle arrived at Kadena Air Base, Okinawa, on July 17, 1945.¹⁵ His landing officially established the Eighth Air Force's presence in the Pacific.¹⁶

Doolittle arrived to conditions that were “a bit more rugged” than England.¹⁷ Instead of a manor home in the English countryside, the Eighth Air Force commander in the Pacific billeted in a “ventilated” tent. As the commanding general, Doolittle benefited from the relative luxury of a wooden floor and low three-foot sidewalls.¹⁸ Nonetheless, during the evenings, Doolittle noted, the incessant rain blew “in one side and out the other—except for [a] considerable amount that stopped off enroute.”¹⁹ The food was not much better. The austere base lacked refrigeration, and the mess facilities issued perishable goods only every two weeks. The Eighth Air Force commander dined on canned “B” rations instead.²⁰

¹³ Eighth Air Force History July-August 1945, Headquarters and Headquarters Section August, AFHRA Call Number K520.07, 2 and Doolittle and Glines, *I Could Never Be So Lucky Again*, 412.

¹⁴ Doolittle and Glines, *I Could Never Be So Lucky Again*, 412 and Entries listed on Monday, 8 January 1945 in personal notebook, James H. Doolittle Papers, Series XVI, McDermott Library.

¹⁵ Entry listed on Tuesday, 9 January 1945 in personal notebook, James H. Doolittle Papers, Series XVI, McDermott Library.

¹⁶ James Doolittle to Joe Doolittle, written letter, 19 July 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library.

¹⁷ James Doolittle to Joe Doolittle, written letter, 19 July 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library.

¹⁸ Doolittle also had the tent modified with a pilot relief tube that led to a pit of crushed rock outside the tent. Humorously, he later recollected that sentries often passed in the morning and shook their head as he “blissfully [stood] in the corner of his own tent.” He figured the unknowing enlisted men considering “the Commanding General a poorly housebroken and rather filthy old man.” Doolittle to Reynolds, 2 February 1953, James H. Doolittle Papers, Box 15, Folder 107, Library of Congress.

¹⁹ James Doolittle to Joe Doolittle, written letter, 20 July 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library see also Doolittle and Glines, 413.

²⁰ Eighth Air Force History July-August 1945, Quartermasters Section, AFHRA Call Number K520.07, 2.

His chauffeured Cadillac was also a luxury of the past. Instead, Doolittle drove himself in a Jeep and used low gear with four-wheel drive to navigate the slick, muddy roads. He joked to Joe, “The Caddy would be no good here!”²¹ On July 26, the Eighth Air Force commander even raised the American flag himself to signify the opening of his newly constructed headquarters while the chaplain prayed for divine intervention for “protection upon those who would carry the war to the enemy.”²²

Despite the austere environment, Doolittle was pleased with his new assignment. He wrote Joe, “All in all I’m happy to be here – I feel that I’m doing a job with this rapidly changing organization. The beauty of a job like this, where things are growing, is that each day you see such...change and improvement and each day feel that something has been accomplished.”²³ Change was indeed the atmosphere in Okinawa. The island resided in a strategic location—a mere 325 miles from the Japanese home island of Kyushu. When the base was fully operational, the short distance would enable the Eighth to double the strategic bombing campaign’s efforts. Therefore, crushed coral flowed onto the island round the clock, and engineers worked overtime to convert the raw material into over twenty-five miles of runway and ramps for the inbound bombers.²⁴ Likewise, enlisted and officers alike labored to pitch tents, dig latrines, and build the basic facilities.²⁵ As the command began to take shape, Doolittle held his first Pacific press conference and

²¹ James Doolittle to Joe Doolittle, written letter, 19 July 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library.

²² James Doolittle to Joe Doolittle, written letter, 26 July 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library and Eighth Air Force History July-August 1945, Chaplain Section July, AFHRA Call Number K520.07.

²³ James Doolittle to Joe Doolittle, written letter, 20 July 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library see also Doolittle and Glines, *I Could Never Be So Lucky Again*, 413.

²⁴ Eighth Air Force History July-August 1945, Public Relations Section, AFHRA Call Number K520.07, 2-3.

²⁵ Eighth Air Force History July-August 1945, Statistical Control Section, AFHRA Call Number K520.07, 1.

announced that the Eighth Air Force would begin operations in late August.²⁶ The first B-29s intended to participate in those raids arrived on August 8.²⁷ The rest of Doolittle's staff and additional manpower soon followed. By the end of the month, Doolittle commanded 16,798 airmen.²⁸

Nonetheless, demands on Doolittle's time were considerably less than what he experienced in the European theater. Despite its rapid growth, the fledgling command was a fraction of the force Doolittle had commanded in Europe. On V-E day, Doolittle led a fleet of 2,633 heavy bombers and 1,431 fighters, which operated from 65 bases in England.²⁹ In contrast, when the war ended in the Pacific, Doolittle commanded only 32 B-29s, 253 P-47Ns, and eight airfields.³⁰ The smaller force also flew less. The fighters logged only 29 hours of combat patrol, and the president declared VJ Day before the B-29 fleet commenced bombing operations against Japan.³¹

The decreased workload permitted Doolittle to indulge in such leisure activities as hiking, losing at cribbage, and acquiring a sunburn while fishing. On one occasion, he even braved mine-infested waters to swim outside General Carl A. Spaatz's ocean-side villa with his friend, Major General Edward P. "Ted" Curtis.³² The downtime in his schedule provided Doolittle opportunity to reflect on his wartime experiences and

²⁶ Eighth Air Force History July-August 1945, Public Relations Section, AFHRA Call Number K520.07, 2.

²⁷ Eighth Air Force History July-August 1945, A-3 Section, AFHRA Call Number K520.07, 1.

²⁸ Pocket Notebook as of 31 August 1945, James H. Doolittle Papers, Box 18, Folder 127, Library of Congress, 9 and James Doolittle to Joe Doolittle, written letters, 31 July and 5 August 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library.

²⁹ Eighth Air Force Checkbook 11 May 1945, James H. Doolittle Papers, Box 18, Folder 127, Library of Congress and Eighth Air Force History, Public Relations Section, AFHRA K520.07 pp. 2.

³⁰ Pocket Notebook as of 31 August 1945, James H. Doolittle Papers, Box 18, Folder 127, Library of Congress, 15.

³¹ Pocket Notebook as of 31 August 1945, James H. Doolittle Papers, Box 18, Folder 127, Library of Congress, 15.

³² James Doolittle to Joe Doolittle, written letters, 28 July, 7 August, and 8 August 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library.

contemplate the future of air power.³³ The product of these musings were two handwritten speeches and long, thoughtful letters to Joe. These writings clearly articulated Doolittle's beliefs on the role of air power, military organization, and the future of technology.

Doolittle shared a portion of these thoughts in a speech to Tenth Army officers on August 8, 1945. Conscious perhaps of the audience and his official standing, Doolittle made measured comments on the use of air power. Speaking shortly after the B-29 Enola Gay dropped the first atomic bomb, Doolittle described how only air power "zealots" would claim Japan could be defeated without an invasion. Moreover, he declared, "the best military minds in the country decided upon an integrated strategic plan which, in each case, called for invasion."³⁴ Similarly, in his earlier press conference, Doolittle supported the War Department's official position by stating he "personally" believed defeating Japan required an invasion.³⁵ Accordingly, the Eighth Air Force commander told his audience that the "primary job" is for all forces to work together "to assure the success of the invasion."³⁶

Before discussing the Eighth Air Force's role in the invasion, however, Doolittle explained the importance of strategic bombing to the Army officers. The responsibility of strategic air was to "deny the enemy the equipment, supplies and communications necessary for him to carry on offensive or defensive warfare." In that effort, the first step was to "neutralize enemy air."³⁷ Doolittle believed this effort of attrition was accomplished by striking the enemy's "Manufacturing capacity (with

³³ Ori Brafman describes "White Space" as unstructured time or environment that enables creative thought. Brafman, Ori, Judah Pollack, and Drew Birdseye. *The Chaos Imperative: How Chance and Disruption Increase Innovation, Effectiveness, and Success*. (New York: Penguin Books, 2011), 15, 102-108.

³⁴ James Doolittle Talk to Officers of Tenth Army 8 Aug 1945, James H. Doolittle Papers, Box 17, Library of Congress.

³⁵ Eighth Air Force History, Public Relations Section History for July, AFHRA K520.07 pp. 2.

³⁶ James Doolittle Talk to Officers of Tenth Army, 8 Aug 1945, James H. Doolittle Papers, Box 17, Library of Congress.

³⁷ James Doolittle Talk to Officers of Tenth Army, 8 Aug 1945, James H. Doolittle Papers, Box 17, Library of Congress.

bombers), Depots and supplies (with fighters and bombers), and Air force in being (with fighters).” Next, Doolittle professed strategic air’s ability to attrit the warfighting capacity of mechanized equipment by destroying “1) the thing itself and the [manufacturing] plants, 2) What it runs on, [and] 3) what it runs with.” Nonetheless, in an allusion to his views regarding the transportation vs. oil debate, Doolittle emphasized targeting of the latter. In the former Shell executive’s view, petroleum was a lynchpin of the enemy’s war machine.³⁸

Drawing from his recent experience in Europe, Doolittle then described how air power would support the inevitable invasion. First, he cautioned against over confidence due to a recent decline in enemy fighter resistance. He speculated the Japanese were conserving air resources to conduct an “all out air operation to stop [an invasion] at all costs.”³⁹ Therefore, he advocated for “careful reconnaissance and planning” to “ferret out [Japan’s] planes and destroy them on the ground.”⁴⁰ He also mentioned that air power would target enemy communications and mobility leading up to the invasion. These measures would isolate the battlefield and preclude the arrival of enemy reinforcements. As D-Day approached, strategic air would soften the invasion area with fragmentation munitions, general-purpose bombs, and “big-shock 9000 pound” bombs.⁴¹ Following the preparation of the battlefield, “Tactical Air takes over and Strategic Air goes back to the ‘long term’ targets.”⁴² Nevertheless, his strategic air forces would remain “at the call of the Supreme Commander” to provide support as needed.

³⁸ James Doolittle, Talk to Officers of Tenth Army, 8 Aug 1945, James H. Doolittle Papers, Box 17, Library of Congress.

³⁹ James Doolittle, Talk to Officers of Tenth Army, 8 Aug 1945, James H. Doolittle Papers, Box 17, Library of Congress.

⁴⁰ James Doolittle, Talk to Officers of Tenth Army, 8 Aug 1945, James H. Doolittle Papers, Box 17, Library of Congress.

⁴¹ James Doolittle, Talk to Officers of Tenth Army, 8 Aug 1945, James H. Doolittle Papers, Box 17, Library of Congress.

⁴² James Doolittle, Talk to Officers of Tenth Army, 8 Aug 1945, James H. Doolittle Papers, Box 17, Library of Congress.

Again, he alluded to his experiences in Europe as examples in which strategic air supported ground forces, mentioning the Normandy invasion, Caen, St. Lo, and the Ardennes breakthrough. Poignantly recalling the bombing of friendly soldiers, Doolittle cautioned the ground officers of his limited ability to provide close air support. He explained that “[Strategic] Air does not have the communications with ground elements to permit them to work as close as [Tactical] Air.”⁴³ Doolittle summarized the vision of his upcoming air campaign by stating, “This pattern was used in Europe...a somewhat similar pattern will be used here.”⁴⁴

Doolittle’s strong belief in unity of command was another prominent theme of the speech. It was not the first time Doolittle had advocated publicly for military unification. In a newspaper interview earlier in the summer, Doolittle cited his experience under General Eisenhower and remarked, “Everything I have seen convinces me that we must have unity of command, which is another way of saying a single department of national defense.”⁴⁵ In the talk on Okinawa, Doolittle again expressed unreserved faith in “unity of command – one Supreme Commander to control all arms and services.” He applauded the leadership of General Eisenhower, claiming his greatness “was due not only to his sound strategic and tactical doctrines, but *even more* to his open mind – his ability to correctly analyze and employ new ideas and new methods – and to his uncanny ability to get diverse agencies to work together towards the achievement of a desired objective.”⁴⁶ Doolittle argued the campaigns of North Africa, Sicily, Italy, and the Continent

⁴³ James Doolittle, Talk to Officers of Tenth Army, 8 Aug 1945, James H. Doolittle Papers, Box 17, Library of Congress.

⁴⁴ James Doolittle, Talk to Officers of Tenth Army, 8 Aug 1945, James H. Doolittle Papers, Box 17, Library of Congress.

⁴⁵ Quoted in Special to the *New York Times*, “Doolittle Barred From Air Combat,” 22 Jun 1945. Retrieved from ProQuest.

⁴⁶ Emphasis in original. James Doolittle Talk to Officers of Tenth Army, 8 Aug 1945, James H. Doolittle Papers, Box 17, Library of Congress.

validated the concept of unified command. In contrast, he implied divided control led to a failure to defend Pearl Harbor.⁴⁷ Doolittle also described the Pacific command arrangement as “to say the least, complicated.” According to Doolittle the key to success in the Pacific depended on “personalities rather than organization.”⁴⁸

Despite his taciturn speech, Doolittle’s comments regarding unity of command proved controversial. As a subordinate of Eisenhower in Europe, his June remarks on the subject received little notice. When he assumed command in the Pacific, however, reaction to his views changed. Unlike Europe, control of forces in the Pacific was divided. General MacArthur commanded forces in the South West Pacific theater and Admiral Nimitz led the Pacific Ocean theater. Therefore, when provided to the press by his young public relations officer, Doolittle’s comments to the Tenth Army were considered an overt critique of the Pacific command structure.⁴⁹ The ensuing headlines included “Doolittle states war in Pacific can’t be won unless a supreme commander is appointed now.”⁵⁰ One editorial asserted that other “less prominent officers would be reprimanded or perhaps court-martialed” for such remarks.⁵¹ The scathing critique concluded that it was “no time for military men, however, many ribbons or decorations they wear, to sponsor propaganda that tends to discredit the decisions of the high command.”⁵²

⁴⁷ James Doolittle Talk to Officers of Tenth Army, 8 Aug 1945, James H. Doolittle Papers, Box 17, Library of Congress.

⁴⁸ James Doolittle Talk to Officers of Tenth Army, 8 Aug 1945, James H. Doolittle Papers, Box 17, Library of Congress.

⁴⁹ James Doolittle to Joe Doolittle, written letter, 8 August 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library. See also Doolittle and Glines, *I Could Never Be So Lucky Again*, 415-416. The latter cites the letter date of 7 August, but Doolittle wrote the entry quoted on 8 August, amending a letter written on 7 August.

⁵⁰ James Doolittle to Joe Doolittle, written letter, 23 Aug 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library. See also Doolittle and Glines, *I Could Never Be So Lucky Again*, 416-417. Again, the latter mentions the letter was authored on 22 August, but Doolittle amended a letter he wrote the previous day, adding the quoted entry on 23 August.

⁵¹ David Lawrence, “Doolittle Speech Amazing,” n.d., Doolittle Papers, Box 65, Library of Congress.

⁵² David Lawrence, “Doolittle Speech Amazing,” n.d., Doolittle Papers, Box 65, Library of Congress.

Doolittle claimed innocence regarding the media “furor” his comments had incited. He assured Joe that he “didn’t even mention the present command in the Pacific...No matter how I felt about it, I was not in a position while still in the military service to go outside of military channels.” Reviewing the news articles, he was disappointed that his words were “exaggerated to make a story.”⁵³ Regardless, the headlines betrayed his true beliefs as he admitted to Joe, “What I thought but could not ethically express would have made a dandy story.”⁵⁴

These experiences fueled Doolittle’s distrust of media. Similar to his sentiments on the air racing circuit, he believed the press needlessly sought sensationalism. In another letter to his wife, he commented, “A gang is coming in about an hour. They will want sensational statements on the new bomb and on Russia’s entry into the war. I’ll be noncommittal and then pray for the best when their articles come out. The American public wants sensationalism, and the press dishes it out.”⁵⁵ He mused to Joe, “Through years we have marveled at this trait in human nature—odd but very real—and dangerous.”⁵⁶

Nonetheless, Doolittle’s media concerns did not deter him from expressing his opinions. He pontificated his thoughts on air power in a talk to officers of Island Command on August 20, 1945. Hoping to preclude further media distractions, he emphasized that the discussion was “off the record” and asked that his remarks remain “in this room.”⁵⁷ He cautioned his words would be controversial, but hoped they would

⁵³ James Doolittle to Joe Doolittle, written letter, 23 Aug 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library. See also Doolittle and Glines, *I Could Never Be So Lucky Again*, 416-417.

⁵⁴ James Doolittle to Joe Doolittle, written letter, 23 Aug 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library. See also Doolittle and Glines, *I Could Never Be So Lucky Again*, 416-417.

⁵⁵ James Doolittle to Joe Doolittle, written letter, 8 August 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library. See also Doolittle and Glines, *I Could Never Be So Lucky Again*, 415-416. The latter cites the letter date of 7 August, but Doolittle wrote the entry quoted on 8 August, amending a letter written on 7 August.

⁵⁶ James Doolittle to Joe Doolittle, written letter, 23 Aug 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library. See also Doolittle and Glines, *I Could Never Be So Lucky Again*, 416-417.

⁵⁷ James Doolittle Speech to Officers of Island Command, 20 Aug 1945, Doolittle Papers, Box 17, Library of Congress.

give his audience “something to think about.” Doolittle began by acknowledging that when future veterans “get together over a ‘scuttle of beer,’ the principal alcoholic argument will be ‘who won the war?’”⁵⁸ Doolittle submitted, “No single individual, arms, service, won the war. It was won by the greatest civil and military team that history has ever known. Truly a ‘Total War.’”⁵⁹ Doolittle’s emphasis on teamwork was a veiled call for an independent Air Force. Teamwork among the services implied equality; equality suggested independence for the Army Air Forces.

Doolittle continued by declaring air power’s importance in securing a new period of security. He submitted that now that the war was done, “we have a new job – to keep the peace.” Turning to history, Doolittle noted that in the last 145 years, the U.S. had engaged in six major wars, which averaged out to a significant conflict every 29 years. Doolittle surmised that because the last two wars were only 24 years apart, “we aren’t apparently improving.” Thus, he concluded, “To have peace we must first desire peace. Second, have the ability to impose our will *for peace* on anyone who does not want it.”⁶⁰ His vision of the armed services entailed “well stocked air bases, in all parts of the world, and a modern air-arm composed of long range bombers, long-range fighters and long-range air transports backed by an adequate Navy and Ground Force.” The Eighth Air Force Commander argued this structure “is the only possibility of maintaining peace over a protracted period.”⁶¹

Looking to the future, Doolittle also emphasized the importance of R&D in securing the national defense. He declared, “Jules Verne, in the

⁵⁸ James Doolittle Speech to Officers of Island Command, 20 Aug 1945, Doolittle Papers, Box 17, Library of Congress.

⁵⁹ James Doolittle Speech to Officers of Island Command, 20 Aug 1945, Doolittle Papers, Box 17, Library of Congress.

⁶⁰ Emphasis in original. James Doolittle Speech to Officers of Island Command, 20 Aug 1945, Doolittle Papers, Box 17, Library of Congress.

⁶¹ James Doolittle Speech to Officers of Island Command, 20 Aug 1945, Doolittle Papers, Box 17, Library of Congress.

light of what we now *know* and can *do* was a piker.”⁶² He reasoned that advancements in electronics, jet propulsion, and atomic energy had changed the character of war. With dust still settling over Nagasaki and Hiroshima, Doolittle ominously proclaimed that conflict “has become more complicated, more costly, and more deadly.”⁶³ Thus, according to Doolittle, “We must maintain and properly support our research and development agencies in the future...we must spend money and employ the best brains in the country at a rate of *10 or 100* times that previously considered necessary.”⁶⁴ Ever the businessman, he also noted “many military developments will have direct commercial applications and we will thus maintain our national position in industry and world trade.” Moreover, by extrapolating the successive development of the airplane, German V-1 buzz bomb, and German V-2 long range rocket, Doolittle envisioned “a winged or streamlined projectile automatically stabilized and controlled – not by a man in it – but by an individual who might be on the ground or *under* the ground.” As an aside, Doolittle prophetically admitted, “We pilots don’t like this – it puts us out of business.”⁶⁵

Doolittle believed these advancements in technology created a new problem: “what agency is going to run these new developments?” He foresaw an interservice fight over who would could control the weapons of the future (and the accompanying budgets). The air advocate proposed classifying new weapons by the media in which they operate. Doolittle admitted that this might require, “some re-adjustment of

⁶² Emphasis in original. James Doolittle Speech to Officers of Island Command, 20 Aug 1945, Doolittle Papers, Box 17, Library of Congress.

⁶³ James Doolittle Speech to Officers of Island Command, 20 Aug 1945, Doolittle Papers, Box 17, Library of Congress.

⁶⁴ Emphasis in original. James Doolittle Speech to Officers of Island Command, 20 Aug 1945, Doolittle Papers, Box 17, Library of Congress.

⁶⁵ Emphasis in original. James Doolittle Speech to Officers of Island Command, 20 Aug 1945, Doolittle Papers, Box 17, Library of Congress.

existing implements and agencies.” In other words, weapons that fly should be administered by an independent air force.⁶⁶

He closed his speech by reiterating his calls for a strong Air Force and robust investment in research and development (R&D). Doolittle exhorted his audience to return home and “*fight for peace*.” This fight required advocacy for “continued extensive research and development” and a “properly organized and administered” military establishment equipped with “the most modern weapons available.”⁶⁷ “This, and this only,” Doolittle argued, “will permit us to impose our will to either stop future wars or will permit us to win them promptly with a minimum of *American Lives Lost*.”⁶⁸

The atrocities of conflict reinforced Doolittle’s convictions in these beliefs. With the end of hostilities, he had the liberty of personally viewing Japanese cities decimated by firebombing and nuclear detonations.⁶⁹ Because 325,000 enemy nationals resided on Okinawa, Doolittle also witnessed war’s consequences through more personal encounters.⁷⁰ In a letter to Joe, Doolittle described how “I saw a little six-year-old (about the size of a four-year-old here) with his hand blown off by a bomb fragment and a little sock over the stump. He was all alone, an orphan, leaning against a fence post.”⁷¹ Doolittle was not unaffected by these visceral experiences. The letter continued, “As I met [the child’s] eye I know that my glance showed guilt as well as pity. And that guilt is not only of us killers in the war, but it is on the American

⁶⁶ James Doolittle Speech to Officers of Island Command, 20 Aug 1945, Doolittle Papers, Box 17, Library of Congress.

⁶⁷ Emphasis in original. James Doolittle Speech to Officers of Island Command, 20 Aug 1945, Doolittle Papers, Box 17, Library of Congress.

⁶⁸ Emphasis in original. James Doolittle Speech to Officers of Island Command, 20 Aug 1945, Doolittle Papers, Box 17, Library of Congress.

⁶⁹ By Wireless to the *New York Times*, *Air Generals View Tokyo Ruins* 4 Sep 1945. Retrieved from ProQuest.

⁷⁰ Congressional Record, Proceedings and Debates of the 79th Congress First Session, Appendix, Volume 91, Part 13, 15 October to 21 December 1945, A5464.

⁷¹ James Doolittle to Joe Doolittle, written letter, 1 September 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library.

people at home, unless steps are taken *now* to see that we don't promptly have another war."⁷²

Doolittle proceeded to outline these steps in his ten-page letter to Joe. First, the country required "a firm national policy directed towards fair dealings with all nations, and the establishment, not only of a better America, but of a better world."⁷³ Second, a "*sound* national defense establishment, capable of rapid expansion and equipped with the most modern equipment available."⁷⁴ Third, his call for "universal military training" underscored his belief in military unification. Finally, he professed the need for "all-out scientific development so we lead the world in technology as well as tactics."⁷⁵ He closed the handwritten thoughts with the following:

We must realize that nations are just groups of individuals and if individuals will fight so will nations—more readily, in fact, if incited by mass hysteria (which can be induced by carefully arranged and controlled propaganda).

We no longer have geographic isolation from Europe and Asia. Scientific development of the future will bring all parts of the world relatively still closer together—will shrink it still further.

Someday, I hope, we can disband our military establishment and devote ourselves to truly constructive pursuits, but until that time comes, let's do everything possible to so train our children and so direct our nation as to give them both the highest possible degree of security in the world which they find themselves.

Quite a lecture!

⁷² Emphasis in original. James Doolittle to Joe Doolittle, written letter, 1 September 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library.

⁷³ James Doolittle to Joe Doolittle, written letter, 1 September 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library.

⁷⁴ James Doolittle to Joe Doolittle, written letter, 1 September 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library.

⁷⁵ James Doolittle to Joe Doolittle, written letter, 1 September 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library.

Love, Jim⁷⁶

In September, General Arnold asked Doolittle to lead a flight of three B-29s from Tokyo nonstop to Washington, DC. With the war over, the chief of the AAF was beginning to marshal efforts to secure service independence. The proposed record-breaking flight would showcase the global reach of strategic bombers to the American public. Honored by the request, Doolittle replied that he “would be delighted to go along,” but thought it might be more appropriate if General Spaatz, Lieutenant General Barney M. Giles, Lieutenant General Nathan F. Twining, or Major General Curtis E. LeMay to led the flight.⁷⁷ Ultimately, higher headquarters determined Giles, the Deputy Commander of the United States Strategic Air Forces in the Pacific, would lead the flight, accompanied by Major General LeMay and Brigadier General Emmett “Rosie” O’Donnell.⁷⁸ Regardless of the circumstances, Doolittle received orders to return to the U.S. on September 10 and departed Okinawa for home two days later.⁷⁹ After a short stopover in Guam, he flew a B-29, stopping at Kwajalein, Hawaii, Sacramento, and Oklahoma City before finally reuniting with Joe in Washington, DC, on September 19, 1945.⁸⁰

Although Doolittle’s assignment in the Pacific was brief, it was a pivotal time of reflection for the air power advocate. In the book *The Chaos Imperative*, Ori Brafman argues that segments of unstructured time known as “white space” often provide a catalyst for creative inspiration.⁸¹ Indeed, the austere environment on Okinawa provided

⁷⁶ James Doolittle to Joe Doolittle, written letter, 1 September 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library.

⁷⁷ Cable, Doolittle to Spaatz, n.d., James H. Doolittle Papers, Box 18, Folder 127, Library of Congress.

⁷⁸ Doolittle later speculated that MacArthur intervened to exclude the famous aviator from the flight as retribution for earlier media transgressions. Doolittle and Glines, *I Could Never Be So Lucky Again*, 426.

⁷⁹ James Doolittle to Joe Doolittle, written letter, 10 September 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library and Entry listed on Thursday, 18 January 1945 in personal notebook, Doolittle Papers, Series XVI, McDermott Library

⁸⁰ Entry listed on Friday, 19 January 1945 in personal notebook, James H. Doolittle Papers, Series XVI, McDermott Library and Doolittle and Glines, *I Could Never Be So Lucky Again*, 426.

⁸¹ Brafman, Ori, Judah Pollack, and Drew Birdseye. *The Chaos Imperative: How Chance and Disruption Increase Innovation, Effectiveness, and Success*. (New York: Penguin Books, 2011) 15,102-108.

Doolittle an opportunity to contemplate his wartime experiences. These thoughts produced extensive handwritten speeches and letters to Joe. Many years later Doolittle remarked that works he penned in Okinawa were the first time that he had “expressed my thinking about the nation’s future in writing.”⁸²

Indeed, these well-articulated arguments comprised Doolittle’s personal theory of air power. Granted, Doolittle’s opinions were not unique. For instance, General Arnold publicly supported unity of command, service independence, and, as examined in more detail elsewhere, strong research and development. Doolittle, however, had voiced similar opinions before. His dissenting opinion on the Baker Board indicates he supported air service independence in 1934. Likewise, in 1940 he lamented air corps bureaucracy, which tended to “retard rather than encourage research and development.”⁸³ Finally, a review of Doolittle’s later speeches reveals a rhetorical connection to the lectures and letters he penned on Okinawa. Hence, although Doolittle’s and Arnold’s views coincided, the correlation is not a result of undue influence of the latter over the former. To use his words, Doolittle “wore his own hat,” it just happened to be the same size as Arnold’s.⁸⁴

Regardless, Doolittle returned from the Pacific with an ardent affirmation of the necessity for an independent Air Force and strong investment in R&D. He repeatedly drew upon this theoretical framework as an advocate for air power.

Similar to his homecoming from England, Doolittle’s star power garnered media attention when he returned from the Pacific. This time, however, his forceful beliefs generated significant controversy.

⁸² Doolittle and Glines, *I Could Never Be So Lucky Again*, 419.

⁸³ Doolittle to Col Leonard S. Horner, National Research Council 4 June 1940, James H. Doolittle Papers, Box 26, Folder 118, Library of Congress.

⁸⁴ Doolittle used the term in Doolittle to Holland, letter, 2 March 1950, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

A Zealot Emerges

Doolittle returned home to a nation struggling with how to organize its armed forces in the post-war world. General Arnold believed the time was right to declare independence for the Army Air Forces. The beliefs of Arnold and other air power advocates were inspired by the early writings of Giulio Douhet and Billy Mitchell. The former, an Italian air power theorist, predicted air power would “strike mortal blows into the heart of the enemy” and bring conflict to a quick, decisive end.⁸⁵ Writing later, Mitchell predicted air power’s prominence would usher in an age of deterrence. The zealous Airman believed the destructive power of bombing would cause states to eschew warfare.⁸⁶ Mitchell contended this new type of warfare demanded independent organization, funding, and leadership for a new air force led by airmen. In the Arnold’s view, the strategic bombing campaigns of Europe and Japan, culminating with the atomic bomb, validated these prophecies. Indeed, Bernard Brodie observed when Hiroshima was bombed “that something tremendously important had happened was immediately understood by almost everyone.”⁸⁷ Air power would be the decisive force of the future. Accordingly, airmen believed the nation required an independent service vested with the responsibility of waging this new type of warfare.⁸⁸ It is no surprise that Arnold closed his 1949 memoirs with the words, “In the Strategic Air Force, coupled with our atomic bomb...we hold the balance of power in the world.”⁸⁹

Arnold understood the key to gaining service independence resided in the Congress. Hence, immediately upon Doolittle’s return from the

⁸⁵ Douhet, Giulio. *The Command of the Air* (Tuscaloosa, AL: The University of Alabama Press, 2009) 15.

⁸⁶ Mitchell, William. *Winged Defense: The Development and Possibilities of Modern Air Power-Economic and Military* (Tuscaloosa, AL: The University of Alabama Press, 2009) 16.

⁸⁷ Brodie, Bernard. *Strategy in the Missile Age* (Santa Monica, CA: RAND Corporation, 2007), 150.

⁸⁸ Caraley, Demetrios. *The Politics of Military Unification: A Study of Conflict and the Policy Process* (New York: Columbia University Press, 1966), 82.

⁸⁹ Arnold, Henry Harley. *Global Mission* (Blue Ridge Summit, PA: Tab Books, 1949) 615.

Pacific, the Chief of the Army Air Forces dispatched the returning hero on a series of speeches designed to generate popular support for an independent Air Force. It was an active schedule. Between October 1 and December 17, 1945, Doolittle made forty flights across the country and gave eighteen speeches to veterans group and civic organizations.⁹⁰ Thus, Doolittle's reunion with his family was short lived. Two days after coming home, he and Joe flew to New York for a reception. The public relations campaign had begun.⁹¹

Doolittle delivered his first public speech after returning from the war on October 1, 1945. Addressing the Wings Club Dinner in New York, Doolittle drew upon the concepts he had articulated the previous summer. He declared the best means of avoiding another war was "through the establishment of a sound, properly equipped, national defense organization in which air has its proper place and in the continuation of an active program of research and development."⁹² He closed his brief remarks with an impassioned call for unified advocacy:

*But it is disturbing to note...not one air organization... has come out flatfooted and stated that they favored such a reorganization of our national defense establishment. There are voices crying [out in] the wilderness, but we need a sound, strongminded [sic] air organization to sponsor equality for air power. The prompt recognition of the proper role for air is essential to our national security."*⁹³

Doolittle provided a catalyst to form such an air organization. Eleven days after his speech, Doolittle attended a meeting hosted by General Ted Curtis. A close personal friend of Doolittle, the former Chief

⁹⁰ Entries listed Sunday, January 21 to Wednesday, January 31 1945 in personal notebook, James H. Doolittle Papers, Series XVI, McDermott Library; Although Doolittle counted 17 in Doolittle and Glines, *I Could Never Be So Lucky Again*, 433, the record indicates he gave 18 speeches in the time period. Doolittle Papers, Series IV, Box 7, McDermott Library.

⁹¹ Entry listed on Sunday, 21 January 1945 in personal notebook, James H. Doolittle Papers, Series XVI, McDermott Library.

⁹² General Doolittle's Remarks at the Wing Clubs Dinner 1 October 1945, James H. Doolittle Papers, Series IV, Folder 1, McDermott Library, 3.

⁹³ Emphasis in original. General Doolittle's Remarks at the Wing Clubs Dinner 1 October 1945, James H. Doolittle Papers, Series IV, Folder 1, McDermott Library, 3.

of Staff of the Strategic Air Forces in Europe was leaving the Army Air Forces to resume his job as vice president of Eastman Kodak. While on an inspection tour of European bases the previous April, Arnold foresaw a public battle for air force independence and a corresponding need for an independent civilian advocacy group to advance the interests of air power.⁹⁴ Upon Arnold's request, Curtis, a World War I ace, agreed to organize an advocacy group to incorporate returning airmen. Thus, in the meeting, Curtis, Doolittle and ten other men established a non-profit advocacy group that became the Air Force Association (AFA).⁹⁵ Doolittle's fame, penchant for advocacy, and future civilian status made him an obvious choice to lead the new organization.⁹⁶ In time, the AFA would provide a powerful platform for the air power advocate to voice his opinions.

Meanwhile, Doolittle was not alone on the speaking circuit; naval officers were presenting their own perspectives on the debate. Admiral Marc Mitscher, the captain of the aircraft carrier the *Hornet* in April 1942, presented a speech at Annapolis in which he declared that "carrier supremacy defeated Japan."⁹⁷ Likewise, in a October 9 speech to 2,000 guests at the Waldorf-Astoria Hotel, Admiral Chester Nimitz claimed it was "American sea power that ultimately compelled Japan's

⁹⁴ Basic AFA Speech, Doolittle Papers, Series IV, Box 4, Folder 20, McDermott Library, 2-3.

⁹⁵ The other ten men were John (Jack) S. Allard, Everett R. Cook, W. Deering Howe, Rufus Rand, Sol Rosenblatt, Julian B. Rosenthai, James (Jimmy) M. Stewart, Lowell P. Weicker, Cornelius Vanderbilt Whitney, and John Hay Whitney. Collectively the 12 men are considered the "founders" of the AFA, "Fifty Years of AFA" *Air Force Magazine*, 79 no. 2 (February 1996): 35-37 and Straubel, "Crusade for Air Power," 34.

⁹⁶ It is plausible that Doolittle had already decided to return the Shell Oil and shared the information with the group, "Fifty Years of AFA," 36.

⁹⁷ Quoted in Special to the *New York Times*, "Carriers Constitute Power of the Navy and must be Maintained." *New York Times*, 9 October 1945. Retrieved from ProQuest. See also Doolittle to Commanding General, Army Air Forces (Through; The Deputy Commander) 10 November 1945, James H. Doolittle Papers, Box 16, Folder 114, Library of Congress, and Doolittle and Glines, *I Could Never Be So Lucky Again*, 434.

surrender.”⁹⁸ The remarks infuriated Doolittle and he was soon provided a very public venue to express his frustration.

Beginning on October 17, 1945, the Senate Military Affairs Committee commenced hearings on two unification bills under consideration in the Congress.⁹⁹ S.84, sponsored by Senator Lister Hill, and S.1482, submitted by Senators Edwin Johnson and Harley Kilgore, both proposed unifying the armed forces into a single department under a civilian secretary. The bills also established the air force as an independent service.¹⁰⁰ Senior leaders from the War and Naval Departments attended hearings to promote their views on the controversial proposals. Entrenched positions quickly emerged during the hearings. The War Department representatives, Generals Sherwin Marshall, Arnold, and Spaatz, supported unification. In contrast, Admirals King, Nimitz, and Halsey opposed the proposition. After a schedule conflict precluded him from testifying in October, on November 9, Doolittle appeared before the committee to provide his opinion.¹⁰¹ The former boxer did not pull any punches.

Doolittle began with informing the committee that it was not his first time testifying on the matter under consideration. He had served on the board chaired by Newton D. Baker in 1934, which recommended against service unification.¹⁰² The former commander of the Eighth, Twelfth, and Fifteenth Air Forces reminded the panel that he provided the sole dissenting opinion. Doolittle cited the statement he had made eleven years prior, “I am convinced that the required air force can be

⁹⁸ "Nimitz Urges US to Remain Strong," *New York Times*, 10 Oct 1945. Retrieved from ProQuest; Doolittle to Commanding General, Army Air Forces (Through; The Deputy Commander), memorandum, 10 November 1945, James H. Doolittle Papers, Box 16, Folder 114, Library of Congress; Doolittle and Glines, *I Could Never Be So Lucky Again*, 434.

⁹⁹ Caraley, *The Politics of Military Unification*, 44.

¹⁰⁰ Caraley, *The Politics of Military Unification*, 44.

¹⁰¹ Senator Warren Magnuson to Lt. General James Doolittle, letter, 12 October 1945, James H. Doolittle Papers, Box 16, Folder 114, Library of Congress.

¹⁰² Senate. *Hearings Before the Committee on Military Affairs on S. 84 and S. 1482*, 79th Cong., 1st sess., 1945, 283.

more rapidly organized, equipped, and trained if it is developed as an entirely separate service.”¹⁰³ Like many other air advocates, Doolittle believed experiences in World War II validated the importance of air power and his 1934 statement. According to Doolittle, the Baker Board discussed air power in terms of “promise and prophesy” instead of “demonstration and experience.”¹⁰⁴ “Fortunately,” Doolittle remarked, “this committee does not function under the same handicap.”¹⁰⁵ He proceeded to quote the Baker report at length, highlighting statements that appeared myopic in the aftermath of World War II. “[T]hanks to the scrapping of the Baker report and substantially every idea in it,” Doolittle contended, America waged a successful combined bomber offensive against Germany and brought the war in the Pacific to a close without an invasion of Japan.¹⁰⁶ Doolittle noted in the latter case, “The Navy had the transport to make the invasion of Japan possible; the Ground Forces had the power to make it successful and the B-29 made it unnecessary.”¹⁰⁷

Doolittle also argued air power had supplanted the Navy as the nation’s first line of defense. Failing to recognize the changing character of war, Doolittle quipped, the Baker Board “developed a war machine to fight the trench warfare of 1918 and not to meet the blitzkrieg of 1939.”¹⁰⁸ He cautioned that America could not afford to make a similar mistake in the new air power epoch. Referencing polar maps, Doolittle illustrated the range of B-29s and the new B-36 from American bases; the latter aircraft could strike any country in the northern hemisphere.¹⁰⁹ Likewise, America was at risk from attack by any nation

¹⁰³ Senate, *Hearings Before the Committee on Military Affairs*, 286.

¹⁰⁴ Senate, *Hearings Before the Committee on Military Affairs*, 283.

¹⁰⁵ Senate, *Hearings Before the Committee on Military Affairs*, 283.

¹⁰⁶ Senate, *Hearings Before the Committee on Military Affairs*, 285.

¹⁰⁷ Senate, *Hearings Before the Committee on Military Affairs*, 290.

¹⁰⁸ Senate, *Hearings Before the Committee on Military Affairs*, 290-291.

¹⁰⁹ Senate, *Hearings Before the Committee on Military Affairs*, 292.

armed with a long-range strategic bomber. “What we have today in [strategic bombers] and the atomic bomb,” Doolittle cautioned, “someone else will have tomorrow.”¹¹⁰ The threat was ominous and ships were powerless to stop it. He explained to the committee, “As we look into the future...no enemy will come to us by sea; he will come to us first by air, and we will have to meet him by air...Air is the first line of defense.”¹¹¹

Doolittle expounded on the future by expressing “the necessity for continued fundamental research and development of new offensive and defensive weapons.” As in other speeches, Doolittle linked the importance of R&D to industry by submitting that developments “will have a commercial application and thus assure our national position in industry and world trade.”¹¹² The aeronautical engineer also believed R&D would spur “pilotless, gyro-stabilized, radio-controlled, radar-directed” weapons that used “atomic energy as the explosive.” Although he could not predict the precise form of these weapons, he was confident that “the air will be the medium through which these weapons will travel.”¹¹³ Linking these thoughts to military organization, Doolittle recommended classifying weapons “according to the medium” in which they operate, believing the weapons of future belonged as part of an independent air force.¹¹⁴

Unity of command was another topic that Doolittle underscored in his testimony. Drawing on his summer speeches, he stated, “The recent war was won by teamwork...No single service won the war.” The Airman believed the “smooth functioning of the team was the direct result of having unity of command—one supreme commander in each theater of war.”¹¹⁵ He pressed his point further by critiquing naval opposition to a

¹¹⁰ Senate, *Hearings Before the Committee on Military Affairs*, 294.

¹¹¹ Senate, *Hearings Before the Committee on Military Affairs*, 299.

¹¹² Senate, *Hearings Before the Committee on Military Affairs*, 296.

¹¹³ Senate, *Hearings Before the Committee on Military Affairs*, 306.

¹¹⁴ Senate, *Hearings Before the Committee on Military Affairs*, 296.

¹¹⁵ Senate, *Hearings Before the Committee on Military Affairs*, 295.

unified Department of Defense. He stated bluntly, “I have seen the contention made that you can have effective unity of command in the field in wartime without having unity of command in peacetime. I believe this is wrong and I believe that, even worse, it is *hypocrisy*.”¹¹⁶

Doolittle’s attacks on the Navy did not end there. He dismissed the claim that “Any step that is not good for the Navy is not good for the Nation,” arguing that the claim placed “Navy welfare—and expansion—on par with national welfare and expresses the fundamentally fallacious thinking...[of those] who still think of the Navy as the first line of defense.”¹¹⁷ During questioning, also Doolittle assaulted the Navy’s two sacred cows—the battleship and the aircraft carrier. The former, in Doolittle’s opinion, had been “obsolete for the last ten [years]” while the latter had reached the peak of its effectiveness and was “going into obsolescence.”¹¹⁸ Moreover, the aircraft carrier, according to the Airman, had two qualities: “it can move about...[and] it can be sunk.”¹¹⁹ Finally, Doolittle did not hold back when Senator Lister Hill, a unification bill sponsor, asked him to comment on Admiral Nimitz’s and Admiral Mitscher’s public remarks.¹²⁰ After expressing ardent disagreement with the admirals, Doolittle commented poignantly, “our B-29 boys are resting uneasily in their graves as a result of those two comments.”¹²¹

In closing the controversial testimony, Doolittle summarized his opinion succinctly:

It is my earnest conviction that the most sound, efficient, and economical defense establishment can be achieved only through (1) A continuation of fundamental research, (2) the establishment of an autonomous Air Force coequal with land and sea, (3) a single Department of National Defense which

¹¹⁶ Emphasis added. Senate, *Hearings Before the Committee on Military Affairs*, 294-295.

¹¹⁷ Senate, *Hearings Before the Committee on Military Affairs*, 298.

¹¹⁸ Senate, *Hearings Before the Committee on Military Affairs*, 308.

¹¹⁹ Senate, *Hearings Before the Committee on Military Affairs*, 308.

¹²⁰ Truman, *Memoirs by Harry S. Truman, Vol 2: Years of Trial and Hope* (Garden City, NY: Doubleday, 1956), 49.

¹²¹ Quoted in Barkley, Frederick R. “Doolittle Talk on Merger Causes Protest by Navy.” *New York Times*, 10 November 1945. Retrieved by ProQuest.

will coordinate the activities of the three component services.¹²²

The ideas formulated in the Pacific rain had been delivered as opinions to the ultimate legislative body. The comments did not go unnoticed.

Indeed, Doolittle's strident testimony provoked a strong response from Secretary of the Navy James Forrestal. The head of the Navy Department immediately fired off a memorandum of protest to Secretary of War Robert Patterson. In the public letter, Forrestal took issue with Doolittle's charge of hypocrisy stating, "I question whether we should allow...impugning the good faith of people who disagree with us." Forrestal also protested Doolittle's reference to deceased B-29 crews professing, "I question especially whether the death in any particular line of duty—and the resultant grief at home—should be appealed to in order to advance any individual point of view." The secretary ominously claimed, "If we allow an honest difference over principle to degenerate into an exchange of personalities, we shall do irreparable harm."¹²³ In an overt petition to preclude Doolittle from further testimony, he recommended Patterson keep "the proposal now before Congress free from personalities which may leave lasting scars."¹²⁴

The aggressive exchange dominated the nation's headlines, and Doolittle was well aware that he had once again fueled a controversy. Writing Arnold the day after his hearing, Doolittle noted, "I could not but observe Secretary Forrestal's sharp reaction to my testimony."¹²⁵ He clarified to his superior that the controversial remarks were in direct

¹²² Senate, *Hearings Before the Committee on Military Affairs*, 297.

¹²³ Quoted in Barkley, "Doolittle Talk on Merger Causes Protest by Navy."

¹²⁴ Quoted in Barkley, Frederick R. "Doolittle Talk on Merger Causes Protest by Navy." *New York Times*, 10 November 1945. Retrieved from ProQuest.

¹²⁵ Doolittle to Commanding General, Army Air Forces (Through; The Deputy Commander) 10 November 1945, James H. Doolittle Papers, Box 16, Folder 114, Library of Congress.

response to comments made by Nimitz and Mitscher the previous month. Doolittle, however, remained firm in his position, writing:

Any statement which ignores or belittles the magnificent contributions to victory in Japan made by the B-29s's does not give all of the facts, and depreciates the sacrifices of the heroic B-29 crews who attacked the Japanese mainland at a time when the Japanese Air Force was still a potent factor.¹²⁶

Likewise, when questioned on November 12 regarding the firestorm of controversy his words had incited in the press, Doolittle unapologetically responded, "I said what I honestly believe and it still stands."¹²⁷

Despite protests from the Navy, Doolittle received support from the Army for his controversial remarks before Congress. His fellow officers in the Army Air Forces, for instance, were delighted. Writing from the Seventh Tactical Air Command in Europe, General Kepner lauded his testimony as a "masterpiece and I know it is your own, because it smacks of the Doolittle technique from beginning to end."¹²⁸ The former commander of the Eighth Fighter Command also believed Doolittle's statement regarding the primacy of air superiority should be "one of the modern principles of war, because it is undoubtable a basic principle as we found all through this last war."¹²⁹ Likewise, Colonel James Early wrote from the Pacific, "Have been reading about the splendid fight before the Congress. Keep it up."¹³⁰ Furthermore, Senator Hill publicly described Doolittle's testimony as "magnificent" and hoped Forrestal's letter would "stimulate people to read General Doolittle's full

¹²⁶ Doolittle to Commanding General, Army Air Forces (Through: The Deputy Commander) 10 November 1945, James H. Doolittle Papers, Box 16, Folder 114, Library of Congress.

¹²⁷ Quoted in Special to the *New York Times*, "Patterson Backs Doolittle Opinion on Arms Merger," *New York Times*, 13 November 1945. Retrieved from ProQuest.

¹²⁸ Doolittle to Kepner, letter, 9 January 1946, James H. Doolittle Papers, Box 16, Folder 113, Library of Congress.

¹²⁹ Doolittle to Kepner, letter, 9 January 1946, James H. Doolittle Papers, Box 16, Folder 113, Library of Congress.

¹³⁰ Early to Doolittle, letter, 1 December 1945, James H. Doolittle Papers, Box 16, Folder 114, Library of Congress.

statement.”¹³¹ Patterson also supported Doolittle’s testimony. Writing Forrestal in response to the Secretary of Navy’s letter, Patterson defended his subordinate stating:

[Officers should] freely express their own personal convictions with force and vigor. General Doolittle did that in presenting his views to the committee. After receiving your letter, I have read his testimony and I am certain that he had no intention of presenting the case for unification on other than its merits.¹³²

Doolittle followed his controversial hearing before Congress with more public appearances. Speaking before the Annual Convention of the American Legion in Chicago, he declared, “we cannot have...unity of command in the field without having unity of command at home.”¹³³ Therefore, it was essential to establish a “single Department of the Armed Forces in which the Army, the Navy, and the Air Force are co-equal and autonomous.”¹³⁴ Likewise, in Chicago he urged members of the Petroleum Institute “to join this crusade,” and exhorted his audience to “express your approval of the defense organization I have outlined.”¹³⁵ On December 4, Doolittle seized headlines again when he told a sympathetic audience at the Air Power League that the air was the “first line of defense.” He also affirmed the need for an independent air force adequately equipped with 5,000 front-line aircraft.¹³⁶ The following day

¹³¹ “Senators Press Merger Dispute,” *New York Times*, 11 November 1945. Retrieved from ProQuest.

¹³² Quoted in Special to the *New York Times*, “PATTERSON BACKS DOOLITTLE OPINION ON ARMS MERGER.” *New York Times*, 13 November 1945. Retrieved from ProQuest.

¹³³ Address by Lieut. Gen Doolittle, Lieut. Gen Doolittle Annual Convention of the American Legion, Chicago, 21 November 1945, James H. Doolittle Papers, Series IV, Box 7, Folder 16, McDermott Library, 5.

¹³⁴ Address by Lieut. Gen Doolittle, Annual Convention of the American Legion, Chicago, 21 November 1945, Doolittle Papers, Series IV, Box 7, Folder 16, McDermott Library, 12.

¹³⁵ Lieut. Gen Doolittle, National Petroleum Institute, 14 November 1945, Doolittle Papers, Series IV, Box 7, Folder 14, McDermott Library, 13.

¹³⁶ Address by Lieut. Gen Doolittle, Air Power League, New York, 4 December 1945, Doolittle Papers, Series IV, Box 7, Folder 17, McDermott Library, 5 and “Doolittle Calls for One Command.” *New York Times*, 5 December 1945. Retrieved from ProQuest.

Doolittle again appeared in *The New York Times*: the air advocate was trading his uniform for a suit.¹³⁷

Upon returning from the Pacific, Doolittle's opinions made a significant impact on the unification debate. Doolittle's controversial statements solidified his reputation as a bold, straight-talking leader and earned further admiration from his fellow airmen. His charismatic personality also drew a significant amount of attention to the issue of military unification. Nonetheless, the unification debate would drag on until July 26, 1947. Did Doolittle's testimony perhaps attract too much attention?

In his book, *The Politics of Military Unification*, historian Demetrios Caraley assesses Doolittle as one of the most "strident" and "imperialistic" generals to testify before Congress in the fall of 1945.¹³⁸ Indeed, although the arguments were the same, Doolittle's November remarks were significantly more pointed than his speeches on Okinawa. Perhaps his lack of an official position and intent to leave the service provided him more liberty to articulate his beliefs. Doolittle may have been truly inspired to make whatever necessary statement to preclude the type of destruction he had witnessed during the war. Whatever the reason, Doolittle's impassioned testimony widened the cleavage between sides of the unification debate. It is questionable if this advanced the cause. When commenting on intense political debates, Caraley noted, "the sharing of expectations...may actually exacerbate a conflict."¹³⁹ Indeed, there is no evidence to indicate Doolittle's vociferous argument persuaded any naval proponents in Congress to reconsider their positions. In fact, just the opposite may have occurred. Caraley concluded "the Senate Military Affairs Committee hearings in the fall of

¹³⁷ "Doolittle to Be Oil Executive." *New York Sun*, 6 December 1945, James H. Doolittle Papers, Box 65, Library of Congress.

¹³⁸ Caraley, *The Politics of Military Unification*, 47 and 81.

¹³⁹ Caraley, *The Politics of Military Unification*, 273.

1945... *stimulated rather than removed* the admirals' opposition."¹⁴⁰
Doolittle had become a zealot.

Many years later, a famous Airman commented on Billy Mitchell's crusade for air power in the 1920s. Full of respect for the air power martyr, he declared that Mitchell was "unquestionably a great advocate of the capabilities of air power."¹⁴¹ The retired general also shared many of Mitchell's beliefs regarding air power. These included the supremacy of air power, strong unity of command, the necessity of an independent air force, the importance of a robust reserve force, strong research and development, air power's synergy with the commercial sector, and the need for a political voice to advocate these beliefs.¹⁴² According to the retired general, however, Mitchell had one unfortunate flaw, "like all zealots, he was intolerant of any view other than his own."¹⁴³ Upon reflection, he wondered if Mitchell's methods were "in the [best] interest of advancing aviation."¹⁴⁴ The affable 75 year-old man poignantly speculated that Billy Mitchell would have been more successful "had he been a little more flexible in the application of his ideas."¹⁴⁵ The famous Airman, of course, was Jimmy Doolittle. In the fall of 1945, Doolittle returned from the war with fame and immense personal influence. Perhaps with some advice from his elder self he may have better used his influence "in the best interest of advancing aviation."¹⁴⁶

¹⁴⁰ Emphasis added. Caraley, *The Politics of Military Unification*, 273.

¹⁴¹ General James H Doolittle, Interview by Lt Col Burch, Major Fogelman, and Capt Tate, 26 September 1971, AFHRC call no. K239.0512-793, 20.

¹⁴² Mitchell, *Winged Defense*, xxvii, 20, 24, 98, 113, 134, 179, 221.

¹⁴³ General James H Doolittle, Interview by Lt Col Burch, Major Fogelman, and Capt Tate, 26 September 1971, AFHRC call no. K239.0512-793, 20.

¹⁴⁴ General James H Doolittle, Interview by Lt Col Burch, Major Fogelman, and Capt Tate, 26 September 1971, AFHRC call no. K239.0512-793, 22.

¹⁴⁵ General James H Doolittle, Interview by Lt Col Burch, Major Fogelman, and Capt Tate, 26 September 1971, AFHRC call no. K239.0512-793, 20-21.

¹⁴⁶ General James H Doolittle, Interview by Lt Col Burch, Major Fogelman, and Capt Tate, 26 September 1971, AFHRC call no. K239.0512-793, 22.

A Uniform or a Suit?

In the fall of 1945 Doolittle also engaged in a debate more personal in nature—what career he would pursue following the war. Doolittle began seriously to consider the decision when Spaatz paid him a visit while stationed in the Pacific. At the time, Doolittle gave his superior an ultimatum: he “wouldn’t consider staying in the service upon return unless made a permanent brigadier general immediately.”¹⁴⁷ It was not an insignificant request from a reserve officer. At the time, Spaatz, Kenney, and Eaker (who all outranked Doolittle) held only the permanent grade of brigadier general.¹⁴⁸ Moreover, the nomination would require special dispensation by Congress because Doolittle did not hold a regular commission.¹⁴⁹ Nonetheless, it was worth asking for the promotion. Retirement pay as brigadier general was \$375 a month and would provide a secure source of income for Joe should he fall to misfortune.¹⁵⁰ More importantly, a prompt promotion to O-7 in the regular Army might lead to his preferred rank of permanent major general (which provided \$125 more per month in retirement pay). Doolittle realized, however, it would be unlikely for him to leap ahead of his peers. He summarized his thoughts with, “If [a promotion to major general] is not in line with the desires of my peers, I’ll get out and probably go back to Shell, if they still want me, and then set aside enough to become independent in the next five years.”¹⁵¹

¹⁴⁷ James Doolittle to Joe Doolittle, written letter, 1 September 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library.

¹⁴⁸ James Doolittle to Joe Doolittle, written letter, 1 September 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library.

¹⁴⁹ Doolittle to Kepner, letter, 9 January 1946, James H. Doolittle Papers, Box 16, Folder 113, Library of Congress.

¹⁵⁰ \$375 equates to nearly \$5,000 2016 dollars. Major General W. S. Paul to Doolittle, letter, 11 April 1946, James H. Doolittle Papers, Box 16, Folder 112, Library of Congress and Doolittle and Glines, *I Could Never Be So Lucky Again*, 438.

¹⁵¹ James Doolittle to Joe Doolittle, written letter, 1 September 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library.

When Doolittle arrived in New York in early October, he again considered his future in the armed forces. During a reception, his former supervisor at Shell Oil, company president Alex Fraser, approached him with a proposal to return to civilian life. He offered Doolittle a position as vice president and membership on the board of directors. The accompanying salary was handsome: three times his pay as a (temporary) lieutenant general.¹⁵² It was a tempting offer. Shortly after the meeting, Doolittle indicated he was willing to “become a civilian again as soon as the Army says it no longer needs me.”¹⁵³ The Army, however, did want Doolittle. His ultimatum to Spaatz worked, and in November, Doolittle learned he would be nominated for appointment as a brigadier general in the Regular Army.¹⁵⁴

Nonetheless, Shell’s offer was too generous for Doolittle to refuse. The company’s offer included a provision that permitted Doolittle to take a leave of absence whenever the government requested his services.¹⁵⁵ During these absences, the vice president remained on the Shell payroll and did not seek government reimbursement.¹⁵⁶ Doolittle, therefore, tendered his resignation and commenced terminal leave on 1 January 1946.¹⁵⁷ In the resignation letter to Arnold, Doolittle stated that he intended to “associate myself with one of the basic industries vital to the civilian economy in which I hoped my background and experience would be of value to that industry and the nation as a whole.”¹⁵⁸

¹⁵² Doolittle and Glines, *I Could Never Be So Lucky Again*, 426; General Jimmy Doolittle, Interview by E. M. Emme and W. D. Putnam, 21 April 1969, AFHRC call no. K239.0512-625, 27.

¹⁵³ Quoted in “Keep Power, Doolittle Says,” *Los Angeles Examiner*, 8 October 1945, James H. Doolittle Papers, Box 65, Library of Congress.

¹⁵⁴ Doolittle to the Adjutant General, letter, 5 November 1945, James H. Doolittle Papers, Box 16, Folder 114, Library of Congress; Witsell to Doolittle, letter, 26 October 1946, Official Military Personal File of James H. Doolittle, National Archives and Records Administration, 03 Service Documents.pdf, 14.

¹⁵⁵ Doolittle and Glines, *I Could Never Be So Lucky Again*, 438.

¹⁵⁶ Doolittle and Glines, *I Could Never Be So Lucky Again*, 438 and Doolittle to Twining, letter, 8 January 1951, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

¹⁵⁷ Doolittle and Glines, *I Could Never Be So Lucky Again*, 437.

¹⁵⁸ Doolittle to Commanding General AAF, letter, 10 December 1945, Official Military Personal File of James H. Doolittle, National Archives and Records Administration, 03 Service Documents.pdf, 17; see also Doolittle and Glines, *I Could Never Be So Lucky Again*, 437.

The decision for Doolittle to leave was by no means final, however. The soon-to-be civilian understood his nomination placed the Army in an awkward position; if the nomination was approved, Doolittle would simply ask to retire in the grade of O-7. Therefore, when he decided to return to Shell, Doolittle requested that his name be rescinded from the brigadier general's list to facilitate its passage in Congress.¹⁵⁹ Nonetheless, General Eisenhower asked him to consider remaining on active duty as head of the War Department's Research and Development Division.¹⁶⁰ Perhaps as an enticement to remain on active duty, the Army went forward and submitted his nomination to Congress.

Doolittle disclosed that the nomination did not change his decision, but he did not rebuff the honor. Doolittle even provided advice on how the Army might justify the request. He rationally suggested the nomination might be "in recognition and of appreciation of his services in the war."¹⁶¹ He also argued that his unique arrangement at Shell allowed his service to be "always available to his country."¹⁶² The argument worked. On June 22, Congress appointed Doolittle as a brigadier general in the regular Army with the effective rank of May 1, 1946.¹⁶³ True to his word, Doolittle graciously accepted the appointment, but "wished to retire, if eligible for retirement, and if not, to make this my application for resignation."¹⁶⁴ Ultimately, Secretary of War Patterson weighed in on the matter and declined Doolittle's request for

¹⁵⁹ Doolittle to Kepner, letter, 9 January 1946, James H. Doolittle Papers, Box 16, Folder 113, Library of Congress.

¹⁶⁰ Major General W. S. Paul to Doolittle, letter, 11 April 1946, James H. Doolittle Papers, Box 16, Folder 112, Library of Congress.

¹⁶¹ Notes of phone conversation between Doolittle and General McIntire, n.d., James H. Doolittle Papers, Box 14, Folder 100, Library of Congress.

¹⁶² Notes of phone conversation between Doolittle and General McIntire, n.d., James H. Doolittle Papers, Box 14, Folder 100, Library of Congress.

¹⁶³ Witsell to Doolittle, cable, 25 June 1945, James H. Doolittle Papers, Box 16, Folder 112, Library of Congress.

¹⁶⁴ Doolittle to Witsell, letter, 27 June 1945, James H. Doolittle Papers, Box 16, Folder 112, Library of Congress.

retirement.¹⁶⁵ The decision, however, did not preclude Doolittle from remaining in the Army reserves, and the Army eventually appointed him as a permanent lieutenant general in the reserve corps.¹⁶⁶ The exclusive status as a military flag officer and civilian executive provided Doolittle unique opportunities to advance his air power beliefs. Moreover, like Cincinnatus centuries before, Doolittle preferred serving his country as a civilian. Later in life he reflected on his decision to return to Shell, remarking, “I enjoyed service life, but I enjoyed life in industry more. Besides, I was deep in the battle to create a separate Air Force...and I couldn’t say things that I could say in civilian clothes.”¹⁶⁷ Henceforth, Doolittle would use his military uniform and his civilian suit to advance his crusade.

Examining his decision to return to Shell reveals Doolittle’s rational nature. Similar to his decision to separate in 1930, financial motives figured prominently in his calculus. The money, however, was not the only factor in his decision. Granted, Shell offered an attractive salary, but the flexible leave policy also provided Doolittle an opportunity to pursue his passion for air power advocacy. In other words, Shell offered him the best of both worlds. Moreover, Doolittle questioned his ability to compete in the service with his peers, who had remained in the service through the 1930s.¹⁶⁸ The reserve officer surmised he may have reached the pinnacle of his military career. Throughout the separation process, Doolittle affirmed that “in time of peace I can be of greater

¹⁶⁵ Bergin to Doolittle, letter, 15 July 1946, James H. Doolittle Papers, Box 16, Folder 112, Library of Congress.

¹⁶⁶ Witsell to Doolittle, letter, 27 February 1947, James H. Doolittle Papers, Box 16, Folder 112, Library of Congress.

¹⁶⁷ Quoted in James A. Cox, “A Visit with the Doolittles,” *Shell News*, 2 (1979), 5.

¹⁶⁸ James Doolittle to Joe Doolittle, written letter, 1 September 1945, Doolittle Papers, Series IX, Box 64, Folder 25, McDermott Library.

service to the nation and to the military services outside the Army than in.”¹⁶⁹ History would prove him right.

Conclusion

Doolittle’s journey from command of the Eighth Air Force to an executive at Shell Oil was a significant phase in his life. It was during this transitional period when the powerful advocate formalized his beliefs on air power. Eminent in these personal views were an ardent belief in the requirement for an independent air service and increased support of formal R&D. The end of 1945 solidified his standing as a fierce advocate for air power. His aggressiveness before Congress, however, nearly undermined the cause he sought to advance. Nonetheless, Doolittle’s decision to leave the service reflected his rational career calculus. Doolittle’s new civilian status and reputation as an aggressive air advocate made him an ideal fit to lead the Air Force Association (AFA). Indeed, trading a uniform for a suit enabled Doolittle assume a prominent role as a civilian advocate for air power.

¹⁶⁹ Doolittle to Witsell, letter, 27 June 1946 and Doolittle to Major General W. S. Paul, letter, 14 May 1946, James H. Doolittle Papers, Box 16, Folder 112, Library of Congress.

Chapter 6

The Civilian Advocate

Festivity permeated the autumn air of Columbus Ohio in September 1947. An Air Force Association (AFA) emblem ordained the state capital, and flags lined city streets to welcome members to the organization's inaugural convention.¹ The newly formed group of Army Air Force (AAF) veterans had reason to celebrate. In a matter of days W. Stuart Symington would take the oath of office as the first Secretary of the Air Force, thereby officially establishing the United States Air Force. In his keynote address, General of the Army Dwight D. Eisenhower applauded the AFA for resolving "aviation problems that require specialized—and organized—civilian assistance."² Speaking more plainly, the AFA president, Jimmy Doolittle, proclaimed, "No organization did more than the Air Force Association to achieve a coequal and autonomous Air Force."³ Or did it?

This chapter examines Doolittle's role as a civilian advocate for an independent air force in 1946 and 1947. How influential were his efforts in the campaign for air independence? As a vice president of Shell corporation, how did Doolittle's skills benefit the company? Why did the company provide the famous aviator a liberal leave policy to support the government? Did Doolittle provide the company financial benefit or was Doolittle's employment viewed as a patriotic duty? Regardless, did Doolittle have any influence Shell's business model? Moreover, what benefit, if any, did the Air Force receive from Doolittle's civilian employment? As a civilian, Doolittle's also helped establish the AFA.

¹ James H. Straubel, *Crusade for Airpower: The Story of the Air Force Association* (Washington, DC: Aerospace Education Foundation, 1982), 40; Doolittle to Arnold, letter, 19 September 1947, James H. Doolittle Papers, Box 28, Folder 168, Library of Congress, Washington, DC.

² Quoted in Basic AFA speech, n.d., Doolittle Papers, Series IV, Box 4, Folder 20, McDermott Library, 7.

³ Quoted in Basic AFA speech, n.d., Doolittle Papers, Series IV, Box 4, Folder 20, McDermott Library, 6.

Did he actively lead the organization or merely serve as a figurehead? How does his presidency of the AFA reflect his ability as a leader of large organizations? How did he influence the association's structure? Finally, Doolittle remained a vocal advocate for air power during the final coordination of the National Security Act of 1947. Did he, and by extension the AFA, influence law? The answers to these inquiries offers insight into Doolittle's role in forming an independent air force and shaping the development of air power.

Civil Service at Shell Corporation

In spring of 1946, James and Joe Doolittle relocated to a spacious Park Avenue apartment in Manhattan. Shell provided its new vice president and director a prominent office in the RCA building of Rockefeller Center.⁴ Similar to when he reentered the service and quickly ascended to the rank of general officer, Doolittle faced resentment from his corporate peers because of his prestigious position in the company. Again Doolittle believed he "had to prove [himself] by working harder."⁵

Work hard he did, although it was not always in direct support of the the Shell bottom line. For instance, shortly after moving to New York City, Secretary of War Robert Patterson asked Doolittle to chair an investigation of officer-enlisted relationships. Patterson instituted the board in response to reports of inappropriate treatment of the enlisted ranks during the war.⁶ As a former enlisted man himself, Doolittle's reputation as a "straight shooter" provided credibility to the investigation.⁷ The secretary charged Doolittle to evaluate the officer

⁴ Doolittle paid a monthly rent of \$300 for his NY residence. Schetzer to Doolittle, letter, 14 December 1945, James H. Doolittle Papers, Series IX, Box 64, Folder 11, McDermott Library; Lowell Thomas and Edward Jablonski, *Doolittle: a Biography* (Garden City, NY: Doubleday & Company, Inc., 1976), 315.

⁵ James H. Doolittle with Carroll V. Glines, *I Could Never Be So Lucky Again* (New York: Bantam Books, 1992), 438.

⁶ Thomas and Jablonski, *Doolittle: A Biography*, 318.

⁷ Underwood to Doolittle, letter, 22 March 1946, James H. Doolittle Papers, Box 34, Folder 238, Library of Congress.

“caste” system and “determine what changes, if any, should be made in practices.”⁸ The board interviewed 42 witnesses and reviewed over 1,000 personal letters during the course of its investigation.⁹ Referred to as the “Caste Board,” “G.I. Gripe Board,” or “Doolittle Board” in the press, the investigation concluded instances of abuse were confined to a minority of poor officers.¹⁰ The board did, however, submit recommended changes to improve the quality of the officer corps and promote more equitable treatment of the enlisted force. Suggestions to achieve the latter included establishing adequate pay and allowance scales, standardizing leave accrual across ranks, revision of the military justice system, and abolishing practices that “forbid social association of soldiers of similar likes and tastes because of military rank.”¹¹ The public generally welcomed the report’s recommendations and the Army implemented many of the suggested changes.¹² Patterson applauded Doolittle’s efforts by writing, “you have rendered a valuable service to the War Department.”¹³ In the expression of gratitude, the secretary acknowledged “I realize that [chairing the investigation] must have seriously interfered with your normal pursuits.”¹⁴

Indeed, Doolittle’s service on the Caste Board demonstrated his willingness and ability to prioritize government service over his corporate

⁸ Patterson to Doolittle, letter, 16 March 1946, James H. Doolittle Papers, Box 34, Folder 238, Library of Congress.

⁹ War Department Bureau of Public Relations Press Release, 27 May 1946, James H. Doolittle Papers, Box 34, Folder 238, Library of Congress.

¹⁰ Doolittle and Glines, *I Could Never be so Lucky Again*, 438-439. Shalett, Sidney. “Army ‘Caste’ To Be Reduced,” *New York Times*, 2 June 1947, James H. Doolittle Papers, Box 34, Folder 238, Library of Congress.

¹¹ Report of the Secretary of War’s Board on Officer-Enlisted Man Relationships, May 1946, James H. Doolittle Papers, Box 34, Folder 238, Library of Congress, 17-18.

¹² Doolittle, however, noted that he encountered bitter resentment from many regular officers who disagreed with the board’s conclusions. He also speculated that his two sons, who also served in the Air Force, suffered retribution from the Doolittle Board. Doolittle and Glines, *I Could Never be so Lucky Again*, 443. See also Thomas and Jablonski, *Doolittle: A Biography*, 318.

¹³ Patterson to Doolittle, letter, 28 May 1946, James H. Doolittle Papers, Box 34, Folder 238, Library of Congress.

¹⁴ Patterson to Doolittle, letter, 28 May 1946, James H. Doolittle Papers, Box 34, Folder 238, Library of Congress.

duties. The timing of the request was not convenient; Shell had tasked the new vice president to conduct a tour of its facilities in South America in the spring of 1947. During a press conference, a reporter asked Doolittle if the impending trip would interfere with his duties. He replied stating, "If I can't do this job and go to South America, I will abandon the South American project."¹⁵ Shell President Alex Frazer tailored Doolittle's corporate obligations to accommodate his subordinate's priorities.¹⁶ Doolittle did not oversee any company divisions and reported solely to Frazer. The vice president's responsibilities entailed fulfilling special assignments from the board of directors, serving as the senior advisor on aviation and technical matters, and supporting public relations efforts.¹⁷ Doolittle described his duties as performing "odd jobs for the company that might come under the heading of public relations, advertising, and inspection."¹⁸ The employment arrangement permitted Doolittle freedom to pursue what he thought best for his company and his country.

Doolittle believed advancing company profits and serving his nation were not mutually exclusive. In a speech to the North Texas Oil and Gas Association he asserted, "The minute we entered the industry we assumed a responsibility to the public that depends on us."¹⁹ Likewise, in a lecture to the Industrial College of the Armed Forces (ICAF) Doolittle remarked, "No business can remain in business and remain successful if its sole purpose is to make money." Instead, "the primary purpose of any industry," according to Doolittle, "is to render a

¹⁵ Press Conference by the Special Board to Study Army So-Called "Caste System," 26 March 1946, James H. Doolittle Papers, Box 34, Folder 238, Library of Congress, 6.

¹⁶ Quentin James Reynolds, *The Amazing Mr. Doolittle: a Biography of Lieutenant General James H. Doolittle* (New York: Appleton-Century-Crofts, 1953), 301.

¹⁷ Reynolds, *The Amazing Mr. Doolittle*, 302. Doolittle approved of the description Reynolds made of his duties at Shell. Doolittle to Ogden, letter, 19 January 1953, James H. Doolittle Papers, Box 15, Folder 107, Library of Congress.

¹⁸ Doolittle and Glines, *I Could Never be so Lucky Again*, 438.

¹⁹ Doolittle, James, Address to North Texas Oil and Gas Association, 29 March 1952, James H. Doolittle Papers, Series IV, Box 1, Folder 29, McDermott Library.

necessary public service.”²⁰ Although industry maintained a responsibility to stockholders, the Shell vice president insisted business also held equal duty to its employees, customers, and the public at large. Doolittle underscored the point by stating, “every industry must have an interest in civic affairs and must be an influence for public good.”²¹ The Shell vice president also believed military experience translated well to leadership in industry. He told his ICAF audience, “the head office in many industrial organizations corresponds almost exactly to the general headquarters in a military organization.”²² Likewise, he compared marketing divisions to deployed combat units. In any bureaucracy, he noted the “same problems [and] misunderstandings [existed] ...between the home office and the divisional officers of an industrial organization.”²³

When Doolittle completed his duties on the Caste Board, he honored Frazer’s request to inspect Shell facilities in South America. He made the trip in unique style. Similar to when he joined Shell in 1930, the company purchased an aircraft of Doolittle’s choice for corporate use. The new vice president promptly secured a surplus B-25 from the Army for the mere price of \$8,250. Shell subsequently spent \$23,750 upgrading the interior to make it suitable for executive transportation.²⁴ Doolittle considered it a deal. The government originally purchased the aircraft for \$40,000, and the plane also provided a test platform for innovative lubricants for Shell.²⁵ Doolittle, the “bearcat for promptness,”

²⁰ Doolittle, James Harold, Presentation to Industrial College of the Armed Forces, *Petroleum: World Reserves, Production, Manufacture, and Use*, 1 March 1949, NDU Call number U412.5.L25 49-93, 3.

²¹ Doolittle, *Petroleum: World Reserves, Production, Manufacture, and Use*, 3.

²² Doolittle, *Petroleum: World Reserves, Production, Manufacture, and Use*, 2.

²³ Doolittle, *Petroleum: World Reserves, Production, Manufacture, and Use*, 2-3.

²⁴ Doolittle and Glines, *I Could Never be so Lucky Again*, 438.

²⁵ Doolittle indeed flew the B-25 on test flights. Logbook entries 9 December 1946, 10 April, 10 July, 11 and 12 August 1947, James H. Doolittle Papers, Series XVI, logbook 13, McDermott Library; Doolittle and Glines, *I Could Never be so Lucky Again*, 438.

drove a demanding schedule on the trip.²⁶ The Shell team visited 13 countries on the 27 day tour, including Ecuador, Peru, Costa Rica, Nicaragua, Venezuela and Mexico.²⁷ The legendary aviator piloting a plane like ones that bombed Tokyo garnered much attention. Unlike his two previous trips in the 1930s, Doolittle met with many political leaders and charmed many with his charismatic personality. Ever the socialite, Doolittle attended numerous events making “his own party as he goes,” some lasting into the early morning hours.²⁸ Indeed, Shell business was the topic of many late-night cocktail parties.²⁹

Nonetheless, Shell benefited from more than just Doolittle’s publicity value. The aerospace engineer also drove the innovation of leading-edge fuel products. Similar to his advocacy for 100-octane aviation gasoline in the 1930s, Doolittle believed advancements in engine technology would stimulate demand for “even better aviation fuel than is now being marketed.”³⁰ Therefore, he pressed Shell to increase production of higher-quality, 115-octane fuels.³¹ The innovator also encouraged the company to develop advanced aviation turbine fuel.³² Although jet engines were notoriously inefficient and constituted a small portion of the market, Doolittle foresaw growing demand for military and

²⁶ Notes on Trip to Latin and South America (April 7 – May 6, 1946), James H. Doolittle Papers, Series IX, Box 1, Folder 6 Jack Allard Correspondence, McDermott Library, 1.

²⁷ Logbook entries April and May 1946, James H. Doolittle Papers, Series XVI, logbook 13, McDermott Library.

²⁸ Notes on Trip to Latin and South America (April 7 – May 6, 1946), James H. Doolittle Papers, Series IX, Box 1, Folder 6 Jack Allard Correspondence, McDermott Library, 1.

²⁹ Notes on Trip to Latin and South America (April 7 – May 6, 1946), James H. Doolittle Papers, Series IX, Box 1, Folder 6 Jack Allard Correspondence, McDermott Library, 1, 17, and 20.

³⁰ Address by Mr. James H. Doolittle at “Cat-Cracker Dedication Ceremonies, 12 October 1946, Doolittle Papers, Series IV, Box 7, Folder 31, McDermott Library, 5.

³¹ Jordon to Burns, letter, “Military Requirements,” 5 May 1948, James H. Doolittle Papers, Box 32, Folder 211, Library of Congress.

³² Burroughs to Doolittle, memorandum, “Estimated Military and Commercial Airline Aviation Fuel Requirements for Next Five years,” 25 July 1947, James H. Doolittle Papers, Box 32, Folder 211, Library of Congress, 7.

commercial jet fuel and commissioned studies to increase the density of aviation turbine fuel.³³

The MIT graduate understood a denser product produced more energy per unit of volume, increasing the operational range of “the ultra high-speed airplanes of the future [that will] be volume-limited rather than weight-limited.”³⁴ He justified his thoughts to ICAF students by stating, “during the war, range was always a major problem...In any future war, aircraft range will be even more important. Consequently, a heavy fuel will be required.”³⁵ Doolittle shared his ideas with the acting Assistant Chief of Air Staff, Major General Grandison Gardner, who endorsed further development.³⁶ Indeed, in the late 1940s, the Air Force and Navy began requesting fuel with a higher density.³⁷

The Shell vice president also used his relationship with members of the Air Staff to garner insight on future military fuel requirements. Assistant Deputy Chief of Staff Major General E. M. Powers provided Doolittle confidential estimates of future fuel requirements.³⁸ Doolittle knew Powers well. General Henry “Hap” Arnold had dispatched the two to England in August 1941 to inspect the British aviation industry.³⁹ Powers added a hand-written note to the “confidential” fuels forecast, “Your president [of Shell Oil] is interested in this.”⁴⁰ The estimates were

³³ Doolittle and Glines, *I Could Never be so Lucky Again*, 447.

³⁴ Doolittle, *Petroleum: World Reserves, Production, Manufacture, and Use*, 18-19; Burroughs to Doolittle, memorandum, “Estimated Military and Commercial Airline Aviation Fuel Requirements for Next Five years,” 25 July 1947, James H. Doolittle Papers, Box 32, Folder 211, Library of Congress, 7.

³⁵ Doolittle, *Petroleum: World Reserves, Production, Manufacture, and Use*, 19.

³⁶ Gardner to Doolittle, 30 June 1947, James H. Doolittle Papers, Box 32, Folder 211, Library of Congress.

³⁷ Notes on Difficulties being experienced by the Air Force with the present aviation fuels. Discussed with Major General Powers and other senior people at Wright Field, n.d. James H. Doolittle Papers, Box 32, Folder 211, Library of Congress; Kittinger to Burns, cc Doolittle, cable, 5 December 1947, James H. Doolittle Papers, Box 32, Folder 211, Library of Congress.

³⁸ Powers to Doolittle, letter, 6 November 1947, James H. Doolittle Papers, Box 32, Folder 211, Library of Congress.

³⁹ General James H Doolittle, Interview by Arthur Marmor, 23 June 1965, AFHRC call no. K239.0512-623 C.1, 15.

⁴⁰ The document was classified “confidential” and later declassified. Powers to Doolittle, letter, 6 November 1947, James H. Doolittle Papers, Box 32, Folder 211, Library of Congress.

indeed valuable. Unlike aircraft contracts, which occurred in five to ten-year increments, the government solicited fuel requirements only six months in advance.⁴¹ The estimates confirmed Doolittle's belief in the increased demand for jet turbine fuel. Powers predicted the air force's demand for the product would nearly triple from 2.123 million barrels in 1948 to 7.080 million barrels 1951.⁴² Likewise, the service expected requirement for the higher quality 115-octane fuel to increase from 567,000 to 3.774 million barrels in the four-year period. Moreover, Doolittle's involvement in the Air Force research and development (R&D) community provided visibility into sensitive military plans. For instance, in his personal papers, Doolittle maintained a classified copy of a Research and Development Board study on the fuel availability and feasibility of large operational air fleets.⁴³ Although no evidence suggests Doolittle used this information for nefarious means, the knowledge certainly did not harm Shell's production decisions.

While employed at Shell, Doolittle also served as a liaison between the air force, industry, and the Air National Guard. For example, General Gardner asked Doolittle if he could arrange 25,000 to 30,000 barrels of jet propulsion to alleviate a supply shortfall. Gardner gratefully asked for Doolittle's "personal assistance in this matter."⁴⁴ Within four days, the Shell executive had arranged a petroleum contract to cover the shortfall.⁴⁵ Additionally, following the war, the commercial airline industry desired the expertise of the numerous air mechanics

⁴¹ Doolittle to Powers, letter, 10 November 1947, James H. Doolittle Papers, Box 32, Folder 211, Library of Congress.

⁴² "Estimated Gasoline Consumption in the U.S.A.F." attachment to letter, Powers to Doolittle, 6 November 1947, James H. Doolittle Papers, Box 32, Folder 211, Library of Congress.

⁴³ The document was classified "Secret" and later declassified when Doolittle's personal papers were delivered to the Library of Congress. Brooks to Executive Director, Committee on Aeronautics, 7 November 1951, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

⁴⁴ Gardner to Doolittle, letter, 30 June 1947, James H. Doolittle Papers, Box 32, Folder 211, Library of Congress.

⁴⁵ Cable Shell Oil Co Inc. ATTN: Mr. Doolittle to Joint Army Navy Petroleum Agency, 7 July 1947, James H. Doolittle Papers, Box 32, Folder 211, Library of Congress.

leaving the service. President of Northwest Airlines Croil Hunter contacted Doolittle requesting help making formal contact with the AAF. Doolittle promptly introduced Hunter to Major General F. L. Anderson, the AAF Assistant Chief of Personnel.⁴⁶ Similarly, Doolittle used his connections to streamline officer commissions in newly formed Air National Guard units. With the unification debate raging, Doolittle urged Anderson to intervene noting, “We not only need to preserve the talents and usefulness of these boys but now, more than ever before, require their active support.”⁴⁷ In an effort to improve the reserve flight-training program, he convinced Spaatz to appoint an AFA representative to reside on the AAF Policy Advisory Committee on Air Reserve Matters.⁴⁸ Doolittle also served in a more formal capacity by presiding on general-officer promotion boards for the AAF reserves.⁴⁹

Doolittle’s responsibilities at Shell also briefly provided the added benefit of increased flight time. In 1946, for instance, he logged 328 hours of pilot time, a marked increase over the 163 hours he flew in 1944 as the commander of the Eighth Air Force.⁵⁰ Although Doolittle primarily flew the company’s B-25, the aviation enthusiast also logged time in diverse aircraft such as the Vultee BT-13, Douglas C-47, and even practiced water landings in the Republic RC-3 Seabee.⁵¹ The trend, however, did not continue. The demands of executive duties and public service reduced Doolittle’s ability to remain current in the air. For

⁴⁶ Anderson to Doolittle, letter, 29 July 1946, James H. Doolittle Papers, Box 16, Folder 113, Library of Congress.

⁴⁷ Doolittle to Anderson, letter, 6 June 1946, James H. Doolittle Papers, Box 16, Folder 113, Library of Congress.

⁴⁸ Spaatz to Doolittle, letter, 30 June 1947, James H. Doolittle Papers, Box 28, Folder 168, Library of Congress.

⁴⁹ Adjutant General to Devers, memorandum, “Board of Officers,” 25 June 1946, James H. Doolittle Papers, Box 16, Folder 113, Library of Congress.

⁵⁰ Because Doolittle lost his logbook, it is not possible to determine his total flight time in 1945. Logbook entries 31 December 1944 and 31 December 1946, James H. Doolittle Papers, Series XVI, logbook 13, McDermott Library.

⁵¹ Logbook entries 23 June and 26 June 1946, 15 April 1947, James H. Doolittle Papers, Series XVI, logbook 13, McDermott Library.

example, in June 1947, Doolittle logged only seven hours of flight time. A year prior, he flew over 38 in the same time span. Moreover, the B-25 was not without maintenance troubles. Between April and September of 1947, Doolittle coped with four inflight emergencies including a fuel problem, an engine failure, and a forced landing.⁵² Similar to his decision to retire from air racing, Doolittle recognized the risks he faced as an active pilot. Again he made a prudent decision. Doolittle commanded his last flight in a B-25 to New York on September 21, 1947.⁵³ In twenty-nine years, the aviation pioneer had amassed an impressive 10,021 hours in 265 different aircraft types.⁵⁴

Doolittle's civilian advocacy toward an independent air force produces several observations. First, Doolittle's indulgent superior at Shell, Alex Frazer, provided him sufficient latitude to pursue duties in support of government service. It was a prudent decision that was likely inspired by both patriotism and profit. During World War II, Shell served a strategic role in providing the armed services with petroleum products. Additionally, over 8,000 employees left the company to join the fight against the Axis powers. Over three quarters of the employees returned to Shell, and perhaps Frazer felt compelled to offer Doolittle a special offer to secure his return to the company.⁵⁵ Whatever the reason, Doolittle's employment at Shell provided the corporation a competitive advantage in the petroleum industry. His personal connections with the air force and access to confidential material provided Shell unique insight into military petroleum requirements. The aerospace engineer's technical expertise also spurred innovation in Shell's product line.

⁵² Logbook entries 13 April, 18 April, 2 August, and 4 August 1947, James H. Doolittle Papers, Series XVI, logbook 13, McDermott Library.

⁵³ Although he continued to fly Air Force aircraft under the supervision of a qualified instructor pilot, Doolittle never again served as a pilot-in-command. Doolittle and Glines, *I Could Never be so Lucky Again*, 453-454.

⁵⁴ Logbook entries front cover, James H. Doolittle Papers, Series XVI, logbook 14, McDermott Library. and Doolittle and Glines, *I Could Never be so Lucky Again*, 454.

⁵⁵ Beaton, *Enterprise in Oil*, 633.

Doolittle's legacy at Shell endures today as the company remains a major supplier of aviation fuel for the Department of Defense.⁵⁶

Doolittle's civilian employment also benefited the Air Force. The general's influence in the petroleum industry helped alleviate supply shortages. The Air Force also profited from the increased availability of 115-octane aviation gasoline and improved jet fuel. Furthermore, the armed services enjoyed the luxury of calling upon Doolittle when his services were required. Doolittle believed his job benefited his employer and his country. When asked about his time as a civilian at Shell, Doolittle commented fittingly:

I was a reserve officer, and so did go on active duty for a couple of weeks each year, and I was very interested in aviation and in air power. As a gasoline peddler I was very anxious that they should use the superior Shell products...and so I did maintain my contacts with the military...for business reasons, for my interest in the service, and because they were among my best friends.⁵⁷

Evidence also suggests Doolittle avoided the moral hazards of his unique role as a civilian executive, senior military officer, and public celebrity. Although he enjoyed the luxury of Shell's generous executive pay, no indication exists to suggest he exploited these privileges for personal profit. The limited evidence indicates just the opposite. For example, he refused to accept royalties from Quentin Reynolds's biography titled *The Amazing Mr. Doolittle*. Instead, he insisted his portion of the proceeds go to his longtime friend Jack Allard.⁵⁸ The

⁵⁶ For example, in 2013, the Defense Logistics Agency (DLA) awarded Shell Oil Products a \$1.6 contract for jet fuel. It was the largest contract offered by DLA. Exxon Mobile won the second largest contract valued at \$872 million. Jared Anderson, "Defense Department Announces up to \$5 Billion in Jet Fuel Contracts," *Breaking Energy.com*, 12 December 2013. Retrieved from <http://breakingenergy.com/2013/12/12/defense-department-announces-up-to-5-billion-in-jet-fuel-contracts/>.

⁵⁷ General James H Doolittle, interview by Lt Col Burch, Major Fogelman, and Capt Tate, 26 September 1971, AFHRC call no. K239.0512-793, 29-30.

⁵⁸ Doolittle to Reynolds, letter, 2 February 1953 and Doolittle to Fraser, letter, 20 January 1953, James H. Doolittle Papers, Box 15, Folder 107, Library of Congress.

money benefited Allard who contracted phlebitis during the war and could not return to his job as a vice president at Curtis Wright. Likewise, Doolittle declined payment for an article published by *Collier's Magazine* and insisted James Straubel benefit from the \$1,500 payment.⁵⁹ Moreover, he did not seek royalties from the prospect of a film based on his life. He did, however, request the endeavor monetarily support Joe should he predecease her.⁶⁰ Likewise, Doolittle's primary incentive for pursuing military retirement benefits was to ensure his wife's fiscal security. When he became eligible to collect a military retirement, the Doolittles were financially sound. Hence, he donated the monthly check to the Air Force Academy Foundation and Air Force Aid Society.⁶¹ Not surprisingly, historian Alex Roland described Doolittle as "a man of integrity whose long public service precluded suspicion of any conflict of interest."⁶²

Although the fall of 1947 marked the sunset of Doolittle's piloting career, it also signified the dawn of a newly independent U. S. Air Force. While he pursued his duties at Shell, Doolittle had also served a prominent role in the fight to establish the new service.

The Air Force Association Takes Flight

In the closing days of 1945, the president weighed in on the unification debate. President Harry Truman entered office a firm believer in military unification and was disappointed by the delay in Congressional action.⁶³ After Senate hearings closed without resolution,

⁵⁹ The \$1,500 was equivalent to almost \$13,500 in 2016. Doolittle to Miller, letter, 27 March 1953, James H. Doolittle Papers, Box 28, Folder 168, Library of Congress.

⁶⁰ Doolittle to Fraser, letter, 20 January 1953, James H. Doolittle Papers, Box 15, Folder 107, Library of Congress.

⁶¹ Doolittle and Glines, *I Could Never be so Lucky Again*, 437.

⁶² Alex Roland, *Model Research: The National Advisory Committee for Aeronautics* (Washington, DC: U.S. Government Printing Office, 1985), 285.

⁶³ Truman, *Memoirs by Harry S. Truman, Vol 2: Years of Trial and Hope* (Garden City, NY: Doubleday, 1956), 46, 49.

Truman intervened by sending a special message to Congress.⁶⁴ The 6,000-word letter called for a unified Department of Defense and “parity for air power.”⁶⁵ He attempted to assuage naval trepidation by proposing the military chief of staff position rotate among the services. Likewise, the president suggested carrier-based aircraft and the Marine Corps remain a permanent part of the Navy.⁶⁶ Echoing the concerns of air power advocates, the message called for action stating, “a grave responsibility will rest upon the Congress if it continues to delay this most important measure.”⁶⁷

Doolittle welcomed the president’s remarks but remained skeptical of naval intentions to block air independence. Writing immediately after Truman delivered his letter to Congress, Doolittle remarked confidently, “If the president’s message has as profound an effect upon the public eye as it did upon the Air Force people, we should have a single department of national defense and an autonomous Air Force early next year.”⁶⁸ His optimism, however, waned over the holiday season. Writing Kepner in January 1946, he accurately surmised the president, the Senate, and a majority of the population favored consolidation. Nonetheless, Doolittle feared the Navy would dilute the bill in Congress because the proposal relegated “sea forces to a secondary role in defense.”⁶⁹ He believed the Navy exploited the press’s desire for sensationalism to distort the unification debate. “The Navy’s very excellent propaganda service,” Doolittle observed, had created “another case of a vociferous minority

⁶⁴ Truman, *Memoirs*, 49 and Caraley, Demetrios. *The Politics of Military Unification: A Study of Conflict and the Policy Process* (New York: Columbia University Press, 1966), 55.

⁶⁵ Quoted in Felix Belair, “Army Plan Upheld,” *New York Times*, 20 December 1945. Retrieved from ProQuest.

⁶⁶ Caraley, *The Politics of Military Unification*, 56.

⁶⁷ Quoted in Belair, “Army Plan Upheld.”

⁶⁸ Doolittle to Early, letter, 21 December 1945, James H. Doolittle Papers, Box 16, Folder 114, Library of Congress.

⁶⁹ Doolittle to Kepner, letter, 9 January 1946, James H. Doolittle Papers, Box 16, Folder 113, Library of Congress.

versus an apathetic majority.”⁷⁰ Hence, although an independent Air Force was “a sure thing,” he believed there existed only a “bare possibility” Congress would support a single military department.⁷¹ Doolittle also feared naval opposition might preclude consolidation of land-based air and lay claim to future technical advancements. He explained to Kepner:

The crux of the whole thing lies in whether the Air arm is successful in getting the development of all air weapons, piloted and pilotless, under its auspices, and whether it gets to operate all land-based air. If the development of the weapons of the future goes to an agency other than Air, and if the Navy gets its land-based air, we have lost even though we get a separate Air Force...The foregoing probably sounds pretty gloomy; but, as you know, I have been working on this thing for 20 some years and believe in being a realist.⁷²

Doolittle believed an independent voice could counter the Navy’s press supremacy. Writing to Arnold in the fall of 1945, he surmised “education and stimulation” was required to correct “an unfortunate apathy in connection with our entire National Security problem.” Therefore, Doolittle thought “work should go ahead with the utmost expedition on the organization of the Air Force Association, even though it may not be operative in time.”⁷³ By January, the nascent organization had indeed made significant progress.⁷⁴ Generous donations from the founders and other prominent AAF veterans provided necessary financial means to launch the organization. Similarly, Julian Rosenthal, a lawyer and AAF veteran, donated his services to draft a constitution and by-laws

⁷⁰ Doolittle to Kepner, letter, 9 January 1946, James H. Doolittle Papers, Box 16, Folder 113, Library of Congress.

⁷¹ Doolittle to Kepner, letter, 9 January 1946, James H. Doolittle Papers, Box 16, Folder 113, Library of Congress.

⁷² Doolittle to Kepner, letter, 9 January 1946, James H. Doolittle Papers, Box 16, Folder 113, Library of Congress.

⁷³ Doolittle’s recommendations were routed through Lt. Gen Eaker. Doolittle to Eaker, letter, 25 October 1945, James H. Doolittle Papers, Box 16, special correspondence, Library of Congress.

⁷⁴ Presidents Report to the Air Force Association, James H. Doolittle Papers, Box 28, Folder 168, Library of Congress.

for the association.⁷⁵ These measures permitted the organization to open an initial office in New York and, in turn, relocate to a small basement office in northwest Washington, DC.⁷⁶ In January 1946, the association began accepting membership applications and Jimmy Doolittle was the among the first to pay the organization's \$3.00 annual dues.⁷⁷

Thursday, January 24, 1946, was a significant day for the AFA and the Army Air Forces. Following an official ceremony inducting Doolittle as the organization's first president, the founding officers traveled to the White House for a Presidential endorsement of the association.⁷⁸

President Truman was an enthusiastic supporter of the organization. Indeed, the AFA's belief that air power deserved its "fair and earned position in the national defense program" complemented his vision of defense unification.⁷⁹ Commensurate with the events, Truman named General Carl A. Spaatz the new Commander of the Army Air Forces. Spaatz, it was revealed, would implement a major reorganization of the AAF based on the principle of service independence. Accordingly, Spaatz made his first public appearance as the AAF commander-select at the reception honoring the birth of the AFA.⁸⁰ During the event the newest member of the Joint Chiefs of Staff became the first person to fill out an AFA associate member's card.⁸¹ The well-choreographed sequence of events suggests a significant amount of collaboration between Doolittle and Spaatz. It was not the first time the two men had worked together on the public stage, and it would not be the last.

⁷⁵ Straubel, *Crusade for Airpower*, 34.

⁷⁶ Basic AFA Speech, Doolittle Papers, Series IV, Box 4, Folder 20, McDermott Library, 5.

⁷⁷ Straubel, *Crusade for Airpower*, 35.

⁷⁸ Special to the *New York Times*, "Doolittle Heads Army Air Force Veterans To Support 'Earned Position' in Defense," *New York Times*, 24 January 1946, James H. Doolittle Papers, Box 85, Library of Congress; Basic AFA Speech, Doolittle Papers, Series IV, Box 4, Folder 20, McDermott Library, 4.

⁷⁹ Special to the *New York Times*, "Doolittle Heads Army Air Force Veterans To Support 'Earned Position' in Defense."

⁸⁰ Jack Tait, "Spaatz Replaces Arnold as Head of Air Forces," *New York Herald Tribune*, 25 January 1946, James H. Doolittle Papers, Box 85, Library of Congress.

⁸¹ Special to the *New York Times*. "Doolittle Heads Army Air Force Veterans To Support 'Earned Position' in Defense." *New York Times*, 24 January 1946, James H. Doolittle Papers, Box 85, Library of Congress.

Doolittle outlined the tenets of the AFA upon accepting the presidency. Foremost, the association would be a strict “non-profit organization” with “no axe to grind of a commercial nature.”⁸² The new president also insisted that the AFA’s charter remain unique and focused on advancing the role of air power. He declared, “No attempt will be made to duplicate the legislative and financial benefits which membership in veterans organizations affords.”⁸³ Indeed, Doolittle declined solicitations for help with veteran-related issues stating, “such problems can be best solved by existent veterans organizations...while the Air Force Association devotes itself to service to the Air Force and to the nation.”⁸⁴ Finally, Doolittle insisted civilians lead and manage the organization. The organization’s president understood legal separation from the active-duty military provided more freedom to promote air power. Nonetheless, Doolittle encouraged those on active duty in the AAF to join as “associate members.” This membership provided “all the privileges of regular membership except the right to vote and hold office.”⁸⁵ Hence, it was no mistake Ted Curtis’s formal invitation to lead the AFA occurred after Doolittle announced his return to civilian life.⁸⁶ Likewise, Doolittle eschewed his prestigious uniform and attended public events in “civvies.”⁸⁷

Doolittle influenced AFA membership policy to secure the association’s advocacy role. Therefore, he supported including enlisted Airmen in the organization. Doolittle understood embracing this demographic increased the membership pool significantly. Accordingly,

⁸² Quoted in Straubel, *Crusade for Airpower*, 33.

⁸³ Quoted in Straubel, *Crusade for Airpower*, 33.

⁸⁴ Doolittle to Del Veschio, letter, 6 November 1946, James H. Doolittle Papers, Box 16, Folder 113, Library of Congress.

⁸⁵ Quoted in Straubel, *Crusade for Airpower*, 33.

⁸⁶ Basic AFA Speech, Doolittle Papers, Series IV, Box 4, Folder 20, McDermott Library, 5.

⁸⁷ Elizabeth Oldfield, “Did you Happen to See – Lt Gen James H. Doolittle,” *Washington Times-Herald*, 6 February 1946, James H. Doolittle Papers, Box 85, Library of Congress.

two famous enlisted airmen served as founding officers.⁸⁸ Conversely, Doolittle restricted membership to “people who have served in the AAF” and opposed admitting naval aviators into the organization.⁸⁹ The air power advocate feared members with naval sympathies might undermine the organization’s advocacy charter. Doolittle claimed, “The Air Force Association could not, without reducing or destroying its usefulness, accept as new members people whose ideals were diametrically opposed to those of the present membership.”⁹⁰ Likewise, in his first president’s report, he affirmed “the concept of the organization was that it include only those who...wore the Air Force patch.”⁹¹ Later he affirmed his position, arguing naval members within the AFA could create a “small but critically important destructive element.”⁹²

The legendary aviator’s fame and personal connections were a significant boon for the fledgling AFA. The day following the visit to the White House, Doolittle flew to New York in a B-17 to appear as a guest on Lowell Thomas’s radio show.⁹³ On the national broadcast, Thomas announced the establishment of the Air Force Association and endorsed the goal to “keep the air people together...all who were in the Air Corps in World War I, or the Air Forces in World War II, are eligible [to join].” Thomas also proceeded to explain the organization was the “dream of Hap Arnold” and it has “come true...with General Doolittle at the head of it.”⁹⁴ Moreover, Doolittle used his Army connections to solicit the War

⁸⁸ Forrest Vosler, the second enlisted airmen to earn the Medal of Honor, acted as a member of the board of directors; and Meryll Frost, a Dartmouth football star, served as a vice president. “The Air Force Association,” *Air Force Magazine*, 29 no. 2 (February 1946): 45-46.

⁸⁹ Doolittle to Kepner, letter, 8 January 1946, James H. Doolittle Papers, Box 16, Folder 113, Library of Congress.

⁹⁰ Doolittle to C.R. Smith, 20 April 1949, James H. Doolittle Papers, Box 28, Folder 168, Library of Congress.

⁹¹ President’s Report, n.d., James H. Doolittle Papers, Box 28, Folder 168, Library of Congress, 6.

⁹² Doolittle to Straubel, letter, 14 August 1953, James H. Doolittle Papers, Box 28, Folder 168, Library of Congress.

⁹³ Logbook entry 25 January 1946, James H. Doolittle Papers, Series XVI, logbook 13, McDermott Library.

⁹⁴ Excerpt from Lowell Thomas’ Broadcast, 25 January 1946, James H. Doolittle Papers, Box 85, Library of Congress.

Department for the addresses of 2,400,000 AAF veterans.⁹⁵ Invitations from Jimmy Doolittle to join the AFA soon arrived in the mailboxes of veteran airmen across the nation.

Air Force Magazine also provided a useful avenue to advance AFA membership. As the official AAF service publication during World War II, the magazine enjoyed wide distribution among veteran airmen. Hence, news of the AFA's launch and Doolittle's portrait figured prominently in the February 1946 issue. Henceforth, the monthly periodical contained an invitation from the AFA president to join the organization. Moreover, the magazine soon followed Doolittle's lead by "stepping into civvies."⁹⁶ The decreasing defense budget could no longer support the costly publication.⁹⁷ Therefore, in the summer of 1946, the Army bequeathed *Air Force Magazine* to the AFA and the publication became the organization's official journal. The inaugural AFA issue led with a letter from Doolittle inviting "airmen and airwomen" to "take an active part in assuring America's aviation future by joining with the thousands already in the Air Force Association to keep the AAF gang...together."⁹⁸

Doolittle believed "keeping the gang together" through local AFA chapters amplified the association's influence. Accordingly, he spent time traveling the country to encourage membership and establish local chapters.⁹⁹ He founded the first local unit in Baltimore, Maryland and also formed the first state-level organization in Ohio.¹⁰⁰ The association grew quickly; and, by June of 1946, Lowell Thomas announced the AFA had named wing commanders in all forty-eight states. Once again, a nationwide radio broadcast encouraged AAF veterans to "keep the public

⁹⁵ Doolittle to Kepner 9 January 1946, James H. Doolittle Papers, Box 16, Folder 113, Library of Congress.

⁹⁶ "In this Issue," *Air Force Magazine*, 29 no. 7 (July 1946): 2.

⁹⁷ Straubel, *Crusade for Airpower*, 36.

⁹⁸ Doolittle, James. "A Letter from Jimmy Doolittle," *Air Force Magazine*, 29 no. 7 (July 1946): 10.

⁹⁹ Straubel, *Crusade for Airpower*, 36.

¹⁰⁰ Doolittle speech to the Baltimore AFA, 21 June 1946, Doolittle Papers, Series IV, Box 7, Folder 28, McDermott Library, 1.

informed about the development of air power.”¹⁰¹ Doolittle underscored the significance of a unified voice while addressing the newly formed Baltimore squadron, “With the three million members and ex-members of the AAF in one solid, compact outfit we can make our special knowledge of air power a vital contribution to the future welfare of our country.”¹⁰² With the future of an independent Air Force still uncertain, Doolittle encouraged his audience to act, stating, “There is nothing more important today that you can do.”¹⁰³

The Push for Air Force Independence

Meanwhile, the unification debate continued in Congress. Following multiple rewrites, Senators Elbert D. Thomas, Joseph Lister Hill, and Warren R. Austin submitted a subsequent unification bill, S. 2044, on April 8, 1946.¹⁰⁴ The bill proposed a single Department of Common Defense headed by a civilian Secretary of Common Defense and Chief of Staff of Common Defense.¹⁰⁵ The proposal also established three independent services led by civilian Secretaries. Only the Secretary of Defense, however, held a seat on the president’s Cabinet. The bill was silent on consolidation of land-based air, instead directing the new Secretary of Common Defense to conduct a “full and complete study” of the new Department. The investigation would determine “the most efficient and economical operation of the Department” and “the elimination of any undesirable duplication and overlapping in the functions performed by the coordinate arms of the armed forces.”¹⁰⁶ The bill was recommended to the floor by the Senate Military Affairs

¹⁰¹ Excerpt from Lowell Thomas’ Broadcast, 10 June 1946, James H. Doolittle Papers, Box 28, Folder 168, Library of Congress.

¹⁰² Doolittle speech to the Baltimore AFA, 21 June 1946, Doolittle Papers, Series IV, Box 7, Folder 28, McDermott Library, 3.

¹⁰³ Doolittle speech to the Baltimore AFA, 21 June 1946, Doolittle Papers, Series IV, Box 7, Folder 28, McDermott Library, 3.

¹⁰⁴ Truman, *Memoirs*, 50.

¹⁰⁵ Senate, *Unification of the Armed Forces Hearings Before the Committee on Naval Affairs on S. 2044*, 79th Cong., 2nd sess., 1946, 1-2; Caraley, *The Politics of Military Unification*, 127-129.

¹⁰⁶ Senate, *Unification of the Armed Forces Hearings*, 6.

Committee on May 13 and enjoyed the support of both the president and War Department.¹⁰⁷ The Navy, however, had yet to accede.

Forrestal had anticipated S. 2044's progress to the Senate floor. Skeptical of the War Department's own message, the Navy secretary considered the Military Affairs Committee a "highly prejudiced body which had reached a conclusion in advance."¹⁰⁸ Therefore, when discussing the issue with Chief of Naval Operations, Fleet Admiral Chester Nimitz, Forrestal suggested presenting "our untrammelled point of view to the committees of Congress, such as the Naval Affairs Committees of the House and Senate."¹⁰⁹ Accordingly, the Senate Naval Affairs Committee commenced its own hearings on S. 2044 on April 30.¹¹⁰ With the exception of the bill's sponsors, all the witnesses called before the committee supported the Navy's position. Naval advocates feared the Army and Air Force would exploit the strong centralized power of the new secretary to seize control of the Marine Corps and naval aviation. On May 1, Forrestal himself set the tone when he testified the bill could "result in the wiping out of existing organizations."¹¹¹ Commandant of the Marine Corps General Alexander Vandegrift, stated more plainly, that passing the bill "will in all probability spell extinction for the Marine Corps."¹¹² Adding to the frustration of the president, naval leaders voiced their violent opposition publicly and, once again, drove the controversy onto the front pages of American newspapers.¹¹³ S. 2044 went nowhere.

¹⁰⁷ Caraley, *The Politics of Military Unification*, 130.

¹⁰⁸ James Forrestal, *The Forrestal Diaries*. Edited by Walter Millis, with the Collaboration of E.S. Duffield (New York: Viking, 1966), 118.

¹⁰⁹ Forrestal, *The Forrestal Diaries*, 119.

¹¹⁰ Caraley, *The Politics of Military Unification*, 131.

¹¹¹ Senate. Senate, *Unification of the Armed Forces Hearings*, 32.

¹¹² Senate, *Unification of the Armed Forces Hearings*, 106.

¹¹³ Caraley, *The Politics of Military Unification*, 129.

The president intervened again on May 13 and asked Patterson and Forrestal to reconcile their differences.¹¹⁴ Growing impatient, Truman requested a summary of their agreement by May 31. Although the pair agreed on eight measures, the departments were unable to reach a grand bargain. The two secretaries submitted a joint memorandum outlining four issues of disagreement: 1) the creation of a single military department, 2) the establishment of three branches of service, 3) control of land-based naval aviation, and 4) the function of the Marine Corps.¹¹⁵ With the secretaries unable to resolve the problem of unification, Truman sent a letter to the Naval and Military Affairs Committees of both houses with his recommendation on a way forward. The struggle for an independent Air Force was far from over.

Doolittle used his AFA pulpit to support the president's unification effort. Speaking to the *New York Times*, Doolittle asserted that "carefully planned Navy propaganda" had clouded the debate with misinformation. He continued stating, "I do not wish to impugn the Navy's motives. It is not whether the Navy and Navy advocates are sincere in their expressed beliefs. It is that they are wrong."¹¹⁶ In the article, reprinted in *Air Force Magazine*, Doolittle also expressed relief at the news the unification proposal had been delayed until the next session of Congress.¹¹⁷ Doolittle perceived the Navy had the upper hand in the battle for Air Force independence. Hence, he invited "all Air Force people...[to] join the Air Force Association. In that way only, can there be one large, powerful organization capable of exerting sufficient influence to make air power a keystone in our national defense."¹¹⁸

¹¹⁴ Truman, *Memoirs*, 50.

¹¹⁵ Senate, *Unification of the Armed Forces Hearings*, 203-207; "Army-Navy Dispute Back at White House," *New York Times*, 01 June 1946. Retrieved from ProQuest.

¹¹⁶ Quoted in "Doolittle Urges Unified Air Force." *New York Times*, 24 Jul 1946. Retrieved from ProQuest.

¹¹⁷ The spirited interview appeared above an AFA membership application. *New York Times*, "Doolittle Urges Unified Air Force" *Air Force Magazine*, 29 no. 9 (September 1946): 27.

¹¹⁸ President's Report, n.d., James H. Doolittle Papers, Box 28, Folder 168, Library of Congress, 11.

Spaatz also believed that increased membership in the AFA would galvanize support for an independent Air Force. Accordingly, the air chief directed his staff to distribute AFA membership applications to all AAF stations.¹¹⁹ Likewise, in June 1946, Spaatz reminded his subordinate commanders that the “final decision in AAF matters [would be] made by the Congress.”¹²⁰ In the “secret” letter to all sitting commanders, Spaatz encouraged participation in the AFA stating:

The establishment of a balanced military structure...will depend on the education of the people, and through them to their representation in Congress, as to the requirements for the Army Air Force. One of the main vehicles for this education concerning the requirements for Army Air Forces is the Air Force Association.

We cannot expect the citizen airman who has returned to his civilian pursuits to support an organization which we do not ourselves support. Continued manifestation of a lack of political consciousness will result in the Army Air Forces being relegated to an inferior position and the vital functions integral with our normal mission being absorbed by other and more aggressive services.

If the average individuals on active duty understand these facts, I am sure that their support of the Air Force Association will be spontaneous and large-scale.¹²¹

Doolittle provided Spaatz feedback regarding active-duty participation in the AFA. When Wright Field established a new membership record, the association president reported the strong turnout to Spaatz. In turn, the air chief sent Commanding General of Air Material Command, Lieutenant General Nathan Twinning, a congratulatory letter.¹²² An associate AFA

¹¹⁹ Eaker to Doolittle, 22 July 1946, attachment “Extract from letter to all Commanders,” James H. Doolittle Papers, Box 28, Folder 168, Library of Congress.

¹²⁰ Eaker to Doolittle, 22 July 1946, attachment “Extract from letter to all Commanders,” James H. Doolittle Papers, Box 28, Folder 168, Library of Congress.

¹²¹ Eaker to Doolittle, 22 July 1946, attachment “Extract from letter to all Commanders,” James H. Doolittle Papers, Box 28, Folder 168, Library of Congress.

¹²² Eaker to Doolittle, letter, 22 Jul 1946, James H. Doolittle Papers, Box 28, Folder 168, Library of Congress.

membership certainly did not impede a service member's career aspirations.

Patterson also expressed disappointment in the Navy's ability to block progress towards unification. The head of the War Department, therefore, appointed Assistant Secretary of War for Air, W. Stuart Symington, to lead the unification efforts.¹²³ Symington, in turn, tapped Spaatz to formulate policy goals and implementation plans based on service independence.¹²⁴ Accordingly, Spaatz established an Air Board to formulate "top level policies for the Air Force" and asked Doolittle to serve on the committee.¹²⁵ The Air Staff also solicited Doolittle's opinion on myriad issues. For example, the AAF's air ordnance officer requested his advice on how best to organize, man, train and equip the ordnance service in the midst of "overall reorganization of the Army Air Forces."¹²⁶ In accordance with his priorities, Doolittle often obliged such requests by visiting the Pentagon in person.¹²⁷

Symington also sought Doolittle's counsel concerning the unification debate. The two men met in the fall of 1946 to discuss the ongoing debate in Washington. The passionate air activist recommended the assistant secretary intensify the public advocacy campaign. "Rather than operate defensively by endeavoring to belittle what the opposition does," the AFA president suggested the air community "should operate offensively and do the same job better."¹²⁸ Echoing the beliefs he codified a year prior in the Pacific, Doolittle insisted any unification agreement contain four "must haves:"

¹²³ David R Mets, *Master of Airpower: General Carl A. Spaatz* (Navato, CA: Presidio Press, 1997), 318.

¹²⁴ Mets, *Master of Air Power*, 318.

¹²⁵ Spaatz to Doolittle, letter, 15 July 1947, James H. Doolittle Papers, Box 28, Folder 167, Library of Congress.

¹²⁶ Coupland to Doolittle, letter, 21 June 1946, James H. Doolittle Papers, Box 16, Folder 113, Library of Congress.

¹²⁷ Doolittle to Coupland, letter, 27 June 1946, James H. Doolittle Papers, Box 16, Folder 113, Library of Congress.

¹²⁸ Doolittle to Symington, letter, 1 October 1946, James H. Doolittle Papers, Box 28, Folder 168, Library of Congress.

1. We must have a single Department of the armed forces.
2. We must have a separate autonomous Air Force.
3. All land-based Air must be under the control of the Air Force.
4. The development of the controlled air weapons of the future must be under one agency and that agency must be the Air Force.¹²⁹

Again, he underscored the importance of controlling the technologically advanced weapons of the future. “It is my humble opinion,” Doolittle wrote, “that the fourth ‘must’ is the most important of all because it deals with what we are going to do in the future at a time when we may again be involved in war.”¹³⁰

These recommendations were fresh in Symington’s mind when he traveled to Forrestal’s residence on November 12. The naval secretary summoned representatives from both sides of the debate to his home in hopes of reaching a compromise.¹³¹ Major General Lauris Norstad accompanied Symington in representing the Air Force position while Vice Admiral Arthur Radford and Vice Admiral Forrest Sherman served as proxy for naval interests.¹³² Norstad served as Doolittle’s deputy of operations in the Twelfth Air Force and enjoyed Eisenhower’s esteem for his maturity as a general officer.¹³³ The meeting initiated a series of private discussions that ultimately led to an acceptable agreement. On January 16, 1947 Patterson and Forrestal sent a joint letter to the president summarizing the group’s grand compromise.¹³⁴ The proposition granted Air Force service independence and a unified National Military Establishment. The services, however, remained

¹²⁹ Doolittle to Symington, letter, 1 October 1946, James H. Doolittle Papers, Box 28, Folder 168, Library of Congress.

¹³⁰ Doolittle to Symington, letter, 1 October 1946, James H. Doolittle Papers, Box 28, Folder 168, Library of Congress.

¹³¹ Mets, *Master of Air Power*, 319.

¹³² Forrestal, *The Forrestal Diaries*, 222-223.

¹³³ Wolk, Herman S. “Towards Independence: The Emergence of the U.S. Air Force, 1943-1947” (Washington, DC: Air Force History Support Office 1996), 20.

¹³⁴ Caraley, *Politics of Military Unification*, 152.

separate departments and the Secretary of Defense's powers were relegated to that of "coordination."¹³⁵ The compromise proposed a Presidential Executive Order to define the functions of the armed forces, which granted the Navy control of its land-based air and guaranteed the integrity of the Marine Corps. The president was "exceedingly pleased" and believed the agreement was a "practical and workable plan."¹³⁶ Therefore Truman "heartily" endorsed the compromise and encouraged Congress to pass the ensuing bill.¹³⁷

Doolittle welcomed the agreement's proposed creation of an independent Air Force and centralized military establishment but was not satisfied with the compromise. The AFA Board of Directors produced a statement endorsing the plan as "a definite step in the right direction."¹³⁸ The announcement, however, also foreshadowed further debate of defense organization. The AFA believed "a natural process of evolution" would eventually foster "further unification permitting increased economy and efficiency through drawing on one air force for serving the requirements of all services."¹³⁹ In an interview supporting the statement, Doolittle underscored the point by arguing the new military structure "must be the most efficient and economical one possible."¹⁴⁰ In other words, land based air should be consolidated into the Air Force. Doolittle also predicted the inevitable development of nuclear-armed missiles would create an era of "push button" warfare. These advancements would ultimately compel America to "junk the existing [military] establishment."¹⁴¹

¹³⁵ Mets, *Master of Air Power*, 319.

¹³⁶ "Text of Documents of Unification of Armed Services," *Washington Post*, 17 January 1947. Retrieved from ProQuest.

¹³⁷ Caraley, *Politics of Military Unification*, 154

¹³⁸ Quoted in Straubel, *Crusade for Airpower*, 37.

¹³⁹ Quoted in Straubel, *Crusade for Airpower*, 37.

¹⁴⁰ Quoted in "Merger is Backed by Air Force Group," *New York Times*, 25 January 1947. Retrieved from ProQuest.

¹⁴¹ Quoted in "Merger is Backed by Air Force Group."

Despite Forrestal's support of the compromise, retired and active duty naval officers raised opposition to the bill before Congress.¹⁴² Again, the AAF petitioned the AFA president to serve as a surrogate advocate. Doolittle was asked to use his "influence privately and publicly to gain active and effective support for the Unification Bill now about to expire in Congress." Doolittle's position and stature as an outsider were a distinct advantage. The unknown author confessed, "You understand, of course, that in my official position I am not at liberty to make such an appeal direct to the people or to Congress."¹⁴³ Doolittle was happy to oblige the request. He published an article in *Air Force Magazine* titled "Shall we court calamity?" In the article he asked "all AFA members to take action in the fight against further military appropriation cuts."¹⁴⁴ Doolittle also proclaimed it was a member's "duty to make known his desires to his duly elected representative in Washington."¹⁴⁵

As the final vote approached, the AFA president appraised the Congressional support for the unification bill. Again Doolittle feared "an aggressive minority, opposed to unification, has endeavored to defeat the bill by delay and dilution." He fired off a letter to eleven supporters, which identified six Senators on the Armed Forces Committee who opposed the proposition.¹⁴⁶ Additionally, he named three former Marines who likely would oppose the bill on the Senate floor. The letter also assessed potential resistance in the House and singled out eight unsupportive Congressmen on the House Appropriations Committee, including Chairman Clare Hoffman. Finally, Doolittle named eleven additional representatives who might delay passage of the bill after it

¹⁴² Many admirals resisted the establishment of an independent Air Force because they opposed the doctrine of strategic bombing. This resistance began a simmering debate that culminated in the "revolt of the admirals" in 1949. Caraley *Politics of Military Unification*, 176-177; Mets, *Master of Air Power*, 322.

¹⁴³ Untitled Letter, n.d. James H. Doolittle Papers, Box 28, Folder 168, Library of Congress.

¹⁴⁴ Doolittle, James H. "Shall we Court Calamity?" *Air Force Magazine*, 30 no. 4 (April 1947): 11.

¹⁴⁵ Doolittle, "Shall we Court Calamity?"

¹⁴⁶ Doolittle to Geyer, 21 May 1947, James H. Doolittle Papers, Box 28, Folder 168, Library of Congress.

reached the House floor, including William Cole from New York.¹⁴⁷ Doolittle's fears were not unfounded. Representative Cole successfully amended the bill to ensure the integrity of naval aviation. The verbiage stated that naval aviation included "all land-based naval aviation."¹⁴⁸ Moreover, the amendment directed the "Navy shall be responsible for naval reconnaissance, antisubmarine warfare, and protection of shipping."¹⁴⁹ Although the Presidential Executive Order included similar verbiage, Cole's maneuver cemented the role of naval aviation into law.

With the compromises final, the 80th Congress passed a unification bill and sent it to the president for signature on July 26.¹⁵⁰ Truman signed the National Security Act of 1947 aboard his plane the *Sacred Cow* before departing to visit his ailing mother. The President also signed Executive Order Number 9877 formally establishing the missions of the armed services and the nomination of James Forrestal as the first Secretary of Defense.¹⁵¹ Although the law did not realize Doolittle's full vision of defense reorganization, it did secure independence for the Air Force. Indeed, the AFA appropriately declared July 26 "the day Billy [Mitchell] dreamed of."¹⁵²

As Congress finalized the National Security Act, the AFA was busy making final preparations for its inaugural convention in Ohio. It was not a small event. Over 1,500 members attended, with over 1,200 traveling from out of town to participate.¹⁵³ In addition to Eisenhower, Doolittle invited celebrity speakers General Arnold, World War I ace Eddie Rickenbacker, and the soon-to-be Chief of Staff of the Air Force,

¹⁴⁷ Doolittle to Geyer, 21 May 1947, James H. Doolittle Papers, Box 28, Folder 168, Library of Congress.

¹⁴⁸ Congressional Record 80th Cong., 1st sess., vol. 93, Part 7-8, 9450. Retrieved from archive.org.

¹⁴⁹ Congressional Record 80th Cong., 1st sess., vol. 93, Part 7-8, 9450.

¹⁵⁰ Caraley, *The Politics of Military Unification*, 181.

¹⁵¹ Doolittle and Glines, *I Could Never Be So Lucky Again*, 448.

¹⁵² "Life Begins at Forty," *Air Force Magazine*, 30 no. 9 (September 1947): 19.

¹⁵³ Doolittle to Arnold, 19 September 1947, James H. Doolittle Papers, Box 28, Folder 168, Library of Congress.

General Spaatz, to add further prestige to the event.¹⁵⁴ Although Arnold could not attend due to failing health, Doolittle relayed the general's personal message to the crowd.¹⁵⁵ Arnold urged the convention to "keep our country vigorously aroused to the urgent importance of airpower." Spaatz likewise asserted, "Public support is as essential to effective air power as industries, airplanes, and airmen." The air chief continued explaining that the interwar years taught "the value of organization of true believers within a democracy, in which public opinion is the final term of reference. Hence the formation of the Air Force Association."¹⁵⁶ Accordingly, the convention delegates unanimously approved the following AFA policy statement: "We have banded together as the Air Force Association with this in common—a steadfast belief in a strong United States as the best insurance for world peace, and in air power as the best key to our strength."¹⁵⁷

Doolittle and Spaatz believed civil advocacy played a prominent role in the unification debate. Hence, both men encouraged AFA membership to sway Congressional opinion. The AFA's influence on the outcome of the National Security Act of 1947, however, is questionable. The AFA advanced the Air Force position exclusively through a public-relations campaign.¹⁵⁸ In his detailed study of the unification debate, historian Demetrios Caraley concluded, "It is impossible to establish the dimensions of public opinion on the unification conflict with any degree of certainty or precision."¹⁵⁹ Moreover, Caraley determined that interest groups such as the AFA "did not play a major role in either the creation

¹⁵⁴ Doolittle to Rickenbacker, letter, 1 May 1947; Doolittle to Eisenhower, letter, 1 May 1947; and Spaatz to Doolittle, 17 September 1947, James H. Doolittle Papers, Box 28, Folder 168, Library of Congress.

¹⁵⁵ Doolittle to Arnold, letter, 17 September 1947 James H. Doolittle Papers, Box 28, Folder 168, Library of Congress.

¹⁵⁶ Quoted in Straubel, *Crusade for Airpower*, 41.

¹⁵⁷ Quoted in Straubel, *Crusade for Airpower*, 48.

¹⁵⁸ Caraley, *The Politics of Military Unification*, 235.

¹⁵⁹ Caraley, *The Politics of Military Unification*, 236.

or the resolution of the unification conflict.”¹⁶⁰ Likewise, Dik Daso observed “How much [Doolittle’s] public efforts contributed to acceptance of the legislation that separated the Air Force from the Army cannot be determined. For its part, however, Doolittle led the charge, in the AFA and by his congressional testimony.”¹⁶¹

The results of the National Security Act of 1947 also indicate Doolittle was not effective in advocating his beliefs regarding the unification debate. Indeed, the law satisfied only one of the four “must haves” Doolittle offered Symington—an independent Air Force. Although the act established a National Military Establishment, the Secretary of Defense’s limited powers did not satisfy Doolittle’s vision for unity of command. Moreover, much to Doolittle’s disappointment, the Navy retained control of its land-based aviation. Finally, the law remained silent on which service would control future advanced air weapons. Thus, Doolittle described the law as an “unfortunate compromise...between widely divergent, highly conflicting and strongly held and expressed opinions.”¹⁶² It was a fair assessment.

Doolittle’s relative ineffectiveness in realizing his unification goals, however, reflects more on the nature of the controversy rather than the value of the advocate. Because the unification debate resonated with service cultures, the opposing sides were deeply entrenched in their positions. Compromise, not advocacy, ultimately resolved the conflict. Therefore, it is not surprising that Doolittle’s charismatic and inspirational advocacy did little to affect the debate’s outcome. Instead, the more accommodating approach of Norstad resolved the conflict. Norstad the negotiator, not Doolittle the fighter, secured an independent Air Force.

¹⁶⁰ Caraley, *The Politics of Military Unification*, 234.

¹⁶¹ Dik Alan Daso, *Doolittle: Aerospace Visionary* (Washington, DC: Brassey’s, Inc., 2003), 102.

¹⁶² Doolittle, James H. “Doolittle Scores: Wasted Defense Billions” *Air Force* December 1948, 11.

Nonetheless, Doolittle's formative influence on the AFA is indisputable. His creditability, fame, and charismatic personality drew thousands of airmen together under the banner of the AFA. In the first year alone, 50,000 airmen joined the organization.¹⁶³ By September 1947, the membership ranks had filled to 126,148 with additional airmen joining at a rate of 10,000 per month.¹⁶⁴ The AFA became a massive veteran organization and a powerful voice for air power.¹⁶⁵ Symington credited Doolittle with the success of the organization writing, "congratulations on the magnificent start you have given the Air Force Association."¹⁶⁶ Spaatz likewise commented that Doolittle's "interest and personal participation in the Air Force Association since its inception have contributed vastly to its present success."¹⁶⁷ Symington suitably penned his compliments the day before becoming the first Secretary of the United States Air Force. In less than two years, the AFA had grown from an assembly of a dozen men into a significant air-advocacy group. Indeed, the AFA's organization and mobilization are a testament to Doolittle's leadership ability.

Conclusion

Examination of Doolittle's role as a civilian advocate indicates his duties at Shell Oil Corporation provided him significant freedom to engage in the debate for military unification. Doolittle's public mobilization efforts, however, did not decisively impact the decision to create an independent Air Force. Nonetheless, Doolittle's leadership in establishing the AFA is commendable. Indeed, his combination of

¹⁶³ Straubel, *Crusade for Airpower*, 39.

¹⁶⁴ Straubel, *Crusade for Airpower*, 43.

¹⁶⁵ Whitney to Doolittle, 19 September 1947, James H. Doolittle Papers, Box 28, Folder 168, Library of Congress; McDonald to Doolittle, 28 August 1947, James H. Doolittle Papers, Box 28, Folder 168, Library of Congress.

¹⁶⁶ Symington to Doolittle, letter, 16 September 1947, James H. Doolittle Papers, Box 28, Folder 168, Library of Congress.

¹⁶⁷ Spaatz to Doolittle, letter, 17 September 1947, James H. Doolittle Papers, Box 28, Folder 168, Library of Congress.

aviation credentials, historic achievements, and charismatic advocacy successfully launched the AFA. His strident ideas established principles of advocacy that influenced the organization and the air power narrative, for years to come. The achievements solidified Doolittle's position as a civilian air power advocate. Moreover, the air activist foresaw research and development's prominence in ensuring nation's security. In the coming decade, Doolittle's significant influence proved decisive in the creation of an organization dedicated to the Air Force of the future.



Chapter 7

The Research and Development Advocate

It was 10:10 am on Tuesday, January 3, 1950 and room 4C-1052 of the Pentagon was full. The Air Staff had convened to meet with Dr. Louis N. Ridenour and Lieutenant General James H. Doolittle regarding the recommendations of their report on the status of research and development (R&D) in the Air Force, also known as the Ridenour report. Vice Chief of Staff of the Air Force General Muir Fairchild opened the meeting with a momentous announcement. Air Force Chief of Staff Hoyt Vandenberg had elected to establish “at once” a new Research and Development Command and a new Air Staff position—a Deputy Chief of Staff, Development.¹ It was a bold move. Vandenberg’s decision overruled his staff’s nearly-universal opposition to the proposal. Commensurate with his preeminent role in the report, Doolittle spoke on behalf of the Ridenour Committee commenting, “we are doubly delighted in that in my experience, this is the first civilian report that has ever been favorably acted on by a military organization when they didn’t have to. They are usually filed in the wastepaper basket.”² The meeting set in motion a series of events that ultimately changed the Air Force and its process of developing and acquiring new technology. The decision might not have occurred without the advocacy of Jimmy Doolittle.

This chapter examines Doolittle’s role as an advocate for an independent Air Research and Development Command (ARDC) in the United States Air Force. How decisive were his efforts in the campaign for a separate R&D organization? Understanding Doolittle’s role requires an understanding of the evolving role of technology in the Air Force

¹ Transcript of Proceedings, Air Staff, 3 January 1950, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 1.

² Transcript of Proceedings, Air Staff, 3 January 1950, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 4.

through 1949. How did Doolittle's personal view on R&D compare with the Air Force and its senior leaders? Exploration of Doolittle's role in the Ridenour report raises other questions: How instrumental was Doolittle in composing the committee's recommendations? Did he take an active part in its authorship, or merely serve as a figurehead? Did Doolittle understand how to effect long-term change in a large, complex organization such as the Air Force? Did Doolittle learn anything in the process? Finally, comprehending Doolittle's ultimate contribution to the Air Force decision to establish ARDC requires a close examination of his interpersonal relationship with Vandenberg. Was the business executive's opinion valued by the chief of staff? If so, to what extent? Answers to these questions provide a perspective on the implications of Doolittle's distinctive career in the Air Force, business, and academia.

Research and Development Vision

The legacy of R&D in the Air Force can be traced back to the visionary leadership of General of the Air Force Henry "Hap" Arnold. In his February 1945 War Report, Arnold wrote the "first essential of the air power necessary for our national security is preeminence in research."³ Arnold considered it his duty to project himself "into the future" and forge the Air Force of tomorrow.⁴ To help him in the task, he enlisted the support the famous physicist Dr. Theodore von Karman, director of Caltech's Guggenheim Aeronautical Laboratory.⁵ Arnold asked von Karman to "gather a group of scientists who will work out a blueprint for air research for the next twenty, thirty, perhaps fifty years."⁶ The

³ George C. Marshall, Henry Harley Arnold, and Ernest Joseph King. *The War Reports of General of the Army George C. Marshall, Chief of Staff, General of the Army H.H. Arnold, Commanding General, Army Air Forces Fleet Admiral Ernest J. King, Commander-in-Chief, United States Fleet and Chief of Naval Operations* (Philadelphia: Lippincott, 1947), 415.

⁴ Arnold, Henry Harley. *Global Mission* (Blue Ridge Summit, PA: Tab Books, 1949) 532.

⁵ Thomas A. Sturm, *The USAF Scientific Advisory Board: its First Twenty Years, 1944-1964* (Washington, DC: Office of Air Force History, 1986), 3.

⁶ Theodore von Karman, and Lee Edson, *The Wind and Beyond: Theodore von Karman, pioneer in aviation and pathfinder in space* (Boston: Little Brown, 1967), 268.

resulting committee of eminent scientists, called the Scientific Advisory Group (SAG), included Dr. Hugh Dryden, an aerodynamicist with the National Bureau of Standards and former student of von Karman, Dr. Frank L. Wattendorf.⁷ A young major named Theodore “Teddy” Walkowicz served as the board’s military secretary.⁸ All three men later became close associates of Doolittle.

Meanwhile, as Doolittle prepared his strategic forces for close air support operations for Operation Queen, Arnold formalized his vision in a memo to von Karman. The November 1944 memo asserted that the nation’s future security “will continue to rest in part in developments instituted by our educational and professional scientists.”⁹ Accordingly, Arnold requested a “guide for recommended future AAF research and development programs.”¹⁰ The air chief directed the team to think creatively and “divorce yourself from the present war in order to investigate all the possibilities and desirabilities for postwar and future war’s development.”¹¹ Arnold underscored the importance of the project by placing the services of the AAF “at your disposal to assist in solving these difficult problems.”¹²

As the SAG coalesced, Wattendorf outlined a foreign-travel itinerary of eleven countries, including portions of newly occupied

⁷ Michael H. Gorn, ed., *Prophecy Fulfilled “Toward New Horizons” and its Legacy* (Washington, DC: Air Force History and Museums Program, 1994), 4.

⁸ In the interview, Putt described Walkowicz as a colonel, but he was a major and separated from the Air Force as a lieutenant colonel to pursue a successful career in industry. Major General Donald Putt, Interview by Dr. James C. Hasdorff, 1-3 April 1974, USAF Oral History Collection, AFHRC call no. K239.0512-724, 78.

⁹ Arnold to von Karman, Memorandum, “AAF Long Range Development Program,” 7 November 1944, reprinted in David N. Spires, *Orbital Futures: Selected Documents in Air Force Space History*, Vol 1. (Peterson AFB: CO, Air Force Space Command, 2004), 167.

¹⁰ Arnold to von Karman, Memorandum, “AAF Long Range Development Program,” 7 November 1944, reprinted in Spires, *Orbital Futures*, 168.

¹¹ Arnold to von Karman, Memorandum, “AAF Long Range Development Program,” 7 November 1944, reprinted in Spires, *Orbital Futures*, 166-168.

¹² Arnold to von Karman, Memorandum, “AAF Long Range Development Program,” 7 November 1944, reprinted in Spires, *Orbital Futures*, 168.

Germany.¹³ The previous summer, Doolittle personally conveyed his concerns regarding Germany's technical advances in jet engines and rocketry during a visit by Secretary of War Henry L. Stimson.¹⁴ Indeed, when the team arrived in Europe, it found the Nazi advances in rocketry, jet engines, and guidance systems alarming. In Bavaria, for example, the scientists examined a 100,000 horsepower wind tunnel in Oetzal. The most powerful in the world, the complex dwarfed von Karman's 40,000 horsepower wind tunnel at Caltech.¹⁵ In an interim report, titled *Where We Stand* von Karman attributed the considerable advances of German technology not to "any superiority in their technical and scientific personnel...but rather due to the very substantial support enjoyed by their research institutions in obtaining expensive research equipment."¹⁶ Similarly, on a return trip to the United States, Wattendorf wrote, "Recent investigation by the AAF Scientific Advisory Group, of German engineering and research facilities have revealed that their long range planning of research facilities were [sic] more ambitious and forward looking than our own."¹⁷ Indeed, von Karman and the rest of the team concluded that if the Nazis had better managed their R&D efforts, they might have prolonged or even prevailed in the war.¹⁸ Accordingly, Wattendorf recommended "that consideration and study be given to the establishment of a new Air Force Research and Development Center."¹⁹ The memo provided impetus to ship the Oetzal wind tunnel to the

¹³ Gorn, *Prophecy Fulfilled*, 6.

¹⁴ Arnold to Doolittle, letter, 26 July 1944, Doolittle Papers, Box 18, August 1944-45 ops file, Library of Congress.

¹⁵ Wattendorf, Frank L. "Historic Aspects of the Oetzal (Modane) Wind Tunnel," 22 October 1981, AFHRC call no. K168.151033.

¹⁶ Theodore von Karman, *Where we Stand: A Report Prepared for the AAF Scientific Advisory Group* (Dayton, Oh: Headquarters, Air Materiel Command, 1946), 1.

¹⁷ Wattendorf to Gen. F.O. Carroll, through Col Paul H. Kemmer, memorandum, "Proposal for a New Air Forces Development Center," 19 June 1945, AFHRC call no. K168.15103.

¹⁸ Theodore Von Karman, *Toward New Horizons: Science, the Key to Air Supremacy* (Andrews Air Force Base, MD: Headquarters Air Force Systems Command, History Office, 1992), 1-2. See also Gorn, *Prophecy Fulfilled*, 6.

¹⁹ Wattendorf to Gen. F.O. Carroll, through Col Paul H. Kemmer, memorandum, "Proposal for a New Air Forces Development Center," 19 June 1945, AFHRC call no. K168.15103.

United States, where it became the nucleus of the new Air Engineering and Development Center (AEDC) in Tennessee.²⁰

While von Karman compiled the findings of the investigation, Doolittle espoused his own views regarding the importance of R&D. In his second public appearance after returning from the Pacific, Doolittle addressed the Veterans of Foreign Wars in Chicago. In the speech, Doolittle asserted the war had opened “New horizons which await the future of air power.”²¹ Doolittle believed “the awful destructiveness of the stratospheric rocket and the awesome potentials of atomic energy” meant Americans lived “in sober days.”²² Strength through R&D, however, could prevent another, more devastating, conflict. Thus, Doolittle closed by exhorting the audience to support “unceasing research in science to peer over the horizons of tomorrow” so that “*America remains strong—and free.*”²³ Similarly, a few weeks later he told his son, John, and other West Point cadets that America needed to continue “the research so splendidly carried on during the war, both by the government and by industry.” This effort required a “well financed...research agency.”²⁴

Doolittle’s ideals closely aligned with the findings presented in von Karman’s final report. The collection of manuscripts, collectively titled *Toward New Horizons*, comprised thirty-two monographs arranged in

²⁰ The complex was later renamed the Arnold Engineering and Development Center on 25 June 1951. Wattendorf, Frank L. “Historic Aspects of the Oetzal (Modane) Wind Tunnel,” 22 October 1981, AFHRC call no. K168.15103, 8; “History of AEDC.” Retrieved from <http://www.arnold.af.mil/shared/media/document/AFD-110405-006.pdf>.

²¹ Address by Lieutenant General James H Doolittle, 46th Annual Encampment Veterans of Foreign Wars Chicago Illinois, 2 October 1945, James H. Doolittle Papers, Series IV, Box 7, Folder 2, McDermott Library, 6.

²² Address by Lieutenant General James H Doolittle, 46th Annual Encampment Veterans of Foreign Wars Chicago Illinois, 2 October 1945, James H. Doolittle Papers, Series IV, Box 7, Folder 2, McDermott Library, 6.

²³ Emphasis in original. Address by Lieutenant General James H Doolittle, 46th Annual Encampment Veterans of Foreign Wars Chicago Illinois, 2 October 1945, James H. Doolittle Papers, Series IV, Box 7, Folder 2, McDermott Library, 12.

²⁴ Address by Lt Gen J. H. Doolittle to West Point, 22 October 1945, James H. Doolittle Papers, Series IV, Box 7, Folder 8, McDermott Library, 10.

twelve subject volumes.²⁵ Two primary recommendations resonated in the report. First, victory in the future of air combat required continual scientific inquiry and quick adoption in the form of new acquisitions.²⁶ Second, a separate agency within the Air Force should be dedicated to R&D in support of air power.²⁷ In support of these recommendations, von Karman expressed the need for the Air Force to expand relations with universities, laboratories, and individual scientists through the use of direct contracts.²⁸ According to the report, these initiatives should be funded by an independent R&D budget.²⁹ Doolittle became a firm supporter of the report's recommendations and later considered *Toward New Horizons* "the most important thing that was [ever] done by the Scientific Advisory Board."³⁰

Indeed, *Toward New Horizons* was well received by Arnold. The commanding general lauded the report as the "first of its kind ever produced" and distributed copies to his Air Staff.³¹ Von Karman's work also convinced Arnold to make the civilian committee a permanent part of the Air Force structure, and in his final war report the air chief argued the SAG "must be inducted in the Air Force organization to insure that equipment is kept abreast of the progress."³² In a decision that established an important precedent, Arnold also honored von Karman's insistence that the advisory group "report and make its recommendations directly to the Commanding General and receive its

²⁵ Von Karman to Arnold, letter, 15 December 1945, reprinted in *Toward New Horizons*, xi.

²⁶ Von Karman to Arnold, letter, 15 December 1945, reprinted in *Toward New Horizons*, xii.

²⁷ Von Karman, *Science the Key to Air Supremacy*, 77-84 and Gorn, *Harnessing the Genie*, 4.

²⁸ Von Karman, *Science the Key to Air Supremacy*, 72-73; Robert Sigethy, "The Air Force Organization for Basic Research 1945-1970: A Study in Change" (PhD Diss., The American University, 1980), 22.

²⁹ Von Karman, *Science the Key to Air Supremacy*, 78.

³⁰ General James H Doolittle, Interview by Arthur Marmor, 23 June 1965, AFHRC call no. K239.0512-623 C.1, 29.

³¹ Quoted in Gorn, *Prophesy Fulfilled*, 15.

³² Marshall, Arnold, and King, *The War Reports*, 467.

directives from him.”³³ Henceforth known as the Scientific Advisory Board (SAB), the committee convened its inaugural meeting on June 17, 1946.

Toward New Horizons had a significant impact on the Air Force. For instance, the report inspired Arnold to establish a Deputy Chief of Staff for Research and Development on the Air Staff, and he filled the post with Major General Curtis LeMay.³⁴ Arnold also committed \$10 million of production funds toward a long-term analysis of intercontinental warfare. Similarly, LeMay commissioned a technical study to explore military use of artificial satellites.³⁵ The AAF allocated both contracts to the Douglas Aircraft Corporation, and the efforts established the non-profit Research and Development (RAND) Corporation.³⁶ Perhaps most importantly, *Toward New Horizons* provided a conceptual framework for integrating R&D into the Air Force. Arnold prophesized that von Karman’s work would function “for some time to come as a guide...for scientific research and development in the Air Forces.”³⁷ Von Karman later commented the report “guided the military thinking throughout the 1950s, and played a great part in bringing about the scientific Air Force of today.”³⁸ Doolittle likewise stated that *Toward New Horizons* served as “the basis, the foundation, of our technical development for the better part of a decade.”³⁹ They were right.

³³ Von Karman to The Commanding General, AAF, Memorandum “Organization of the AAF Scientific Advisory Group, 9 January 1946. Retrieved from <http://www.sab.af.mil/shared/media/document/AFD-110926-030.pdf>.

³⁴ Von Karman, *Science the Key to Air Supremacy*, 78; *The First Five Years of the Air Research and Development Command* (Baltimore: Air Research and Development Command, 1955), 13.

³⁵ Spires, *Orbital Futures*, 187.

³⁶ Robert Frank Futrell, *Ideas, Concepts, Doctrine: A History of Basic Thinking in the United States Air Force 1907-1964* (Maxwell AFB, AL: Air University Press, 1974), 105.

³⁷ Quoted in Komons, *Science and the Air Force*, 6.

³⁸ Von Karman, *The Wind and Beyond*, 294.

³⁹ General James H Doolittle, Interview by Arthur Marmor, 23 June 1965, AFHRC call no. K239.0512-623 C.1, 29.

In 1946, the organizational changes proposed in *Toward New Horizons* challenged the AAF's established bureaucracy. During World War II, the demands of attrition warfare compelled the service to subjugate long-term technical advances to the needs of short-term production.⁴⁰ In other words, the Air Force favored production quantity over quality. Air Materiel Command's (AMC) structure institutionalized the priority in a massive bureaucracy that controlled 80 percent of the service's budget.⁴¹ The command consisted of four directorates: Engineering, Procurement, Supply, and Maintenance.⁴² The structure provided unity of command throughout the acquisition cycle and a single point of contact with industry. The arrangement, however, relegated R&D to a secondary function within the massive command. As Doolittle described, "The agency which was charged with the development of new equipment and with quality was less than 10 percent of the overall organization."⁴³ For example, authority for aircraft modifications resided in the production division instead of the engineering section.⁴⁴ Accordingly, during the war, AMC elected not to implement many experimental designs because the advancements would reduce production quantity.⁴⁵ Consequently, as the Eighth Air Force commander in Europe, Doolittle established his own Operational Engineering Section (OES) to "collect, coordinate, test and evaluate

⁴⁰ De Haven, Ethel M. *History of Separation of Research and Development Command from the Air Materiel Command*, Vol 1, 1954, AFHRC call no. K201-82, 29.

⁴¹ The command was named Air Technical Service Command (ATSC) at the end of the war and renamed Air Materiel Command in 1946. De Haven, Ethel M. *History of Separation of Research and Development Command from the Air Materiel Command*, Vol 1, 1954, AFHRC call no. K201-82, 43, 172-173.

⁴² Transcript of Proceedings of the Meeting with the AIA Held in Gen Vandenberg's Office on 7 June 1951, corrected copy, 15 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 7.

⁴³ Transcript of Proceedings of the Meeting with the AIA Held in Gen Vandenberg's Office on 7 June 1951, corrected copy, 15 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 7.

⁴⁴ De Haven, Ethel M. *History of Separation of Research and Development Command from the Air Materiel Command*, Vol 1, 1954, AFHRC call no. K201-82, 20.

⁴⁵ De Haven, Ethel M. *History of Separation of Research and Development Command from the Air Materiel Command*, Vol 1, 1954, AFHRC call no. K201-82, 21.

desires of combat units and of this Headquarters in the development, use and adaptation of their equipment.”⁴⁶ Doolittle admitted he established his own OES because of the command’s lack of responsiveness. “Because we could not get our problems solved fast enough,” he remarked, “we solved them ourselves.”⁴⁷ Indeed, Doolittle believed technical advancement required organizational independence of R&D from the tyranny of procurement. He later commented on the arrangement:

For many years, supply, maintenance, procurement and production were virtually all-important. Gradually, as technology changed, or I should say, as technology rapidly changed, it gradually become apparent that the Air Force was going to be a technical service and it was necessary then, that research and development be given more leeway. By the same token that airpower was held back by the old Army and the old Navy, so was research and development held back by procurement, and it was necessary to separate it until it could come to full growth.⁴⁸

Nonetheless, in 1946, AMC bureaucratic inertia prevailed over von Karman’s recommendation to establish a separate R&D organization. A single civilian report was simply not influential enough to justify restructuring an Air Force major command. Moreover, although the new Commanding General of the AAF, Carl Spaatz, believed in the importance of R&D, he had to contend with more pressing issues.⁴⁹ Following the war, the new air chief struggled to sustain a functional Air Force. It was not a trivial task. Demobilization generated a mass exodus of maintenance expertise from the service. As early as December 1945, Lieutenant General Ira Eaker advised Doolittle of the “depreciated state

⁴⁶ See discussion in Chapter 3 for further details. Eighth HQ to USSAF, letter, 12 July 1944, Doolittle Papers, Box 19, 1944 Operational Records, Library of Congress.

⁴⁷ “General Doolittle’s Summary,” 15 January 1952, AFHRC call no. 168.7265-235, 5.

⁴⁸ General James H Doolittle, Interview by Arthur Marmor, 23 June 1965, AFHRC call no. K239.0512-623 C.1, 28.

⁴⁹ David R Mets, *Master of Airpower: General Carl A. Spaatz* (Navato, CA: Presidio Press, 1997), 326-328.

of maintenance, as a result of the discharge of so much of our experience in connection with the reduction of the war time Air Forces.”⁵⁰

Consequently, by the fall of 1946, only 18% of AAF aircraft were in serviceable condition.⁵¹ The military drawdown also hindered the acquisition of new airplanes to modernize the service.⁵² Hence, in the spring of 1947, Spaatz testified that demobilization had “all but wrecked our Air Force.”⁵³

The aviation industry suffered along with the Air Force in the late 1940s. The end of the war created a 98 percent decline in military aircraft production.⁵⁴ Moreover, Doolittle’s expected growth of civilian demand for aviation did not transpire, and the “aircraft industry had to subsist largely on next-to-no military production orders and the dwindling research and development contracts.”⁵⁵ Consequently, Spaatz informed Congress he was “gravely concerned that we are today rapidly losing one of our principal elements of national security.”⁵⁶ In the ensuing years, the air chief expected manufacturers to produce less than half of the 3,000 aircraft required to keep the companies solvent; hence, the industry would “practically disappear.”⁵⁷ Spaatz cabled Doolittle the implications of a declining budget stating, “in three to five years this country would have a second-rate Air Force largely equipped with obsolete planes.”⁵⁸ Doolittle accordingly used his AFA pulpit to declare:

Our aviation industry today is not healthy. It is on its last legs and many of the aircraft manufactures will go out of

⁵⁰ Eaker to Commanding General, Continental Air Forces 5 December 1945, James H. Doolittle Papers, Box 16, Folder 114, Library of Congress.

⁵¹ Mets, *Master of Airpower*, 313.

⁵² Futrell, *Ideas, Concepts, Doctrine*, 105.

⁵³ House, *Hearings Before the Subcommittee of the Committee on Appropriations on Military Establishment Appropriations Bill for 1948*, 80th Cong., 1st Sess., 1947, 604.

⁵⁴ Karen S. Miller, *The Voice of Business: Hill & Knowlton and Postwar Public Relations* (Chapel Hill, NC: The University of North Carolina Press, 1999), 29.

⁵⁵ De Haven, Ethel M. *History of Separation of Research and Development Command from the Air Material Command*, Vol 1, 1954, AFHRC call no. K201-82, 35.

⁵⁶ House, *Military Establishment Appropriations Bill*, 603.

⁵⁷ House, *Military Establishment Appropriations Bill*, 603.

⁵⁸ Spaatz to Doolittle, cable, 17 February 1947, Box 16, Folder 113, Library of Congress.

existence within the next few months unless they get work to do. So, we have got an Air Force that is too small and we have an industry that is dying. It does not seem to me that it takes much brains to realize that the solution to the thing is to have a bigger Air Force and give the aircraft industry the job of building the airplanes. That we must fight for.⁵⁹

The dwindling defense budget diminished support for R&D within the Air Force. Dr. Ivan Getting, an early member of the SAB, remarked there “was no emphasis on R&D; there was no money.”⁶⁰ In the fall of 1946, for example, Spaatz endorsed the SAB’s first report, but insisted its recommendations be executed “within current budgetary and Headquarters AAF policy limitations.”⁶¹ With few resources to implement change, many in the SAB felt underutilized, and some more cynical members believed the board’s reports served only to defend Air Force budget requests before Congress.⁶² Beyond that, the staff organization in the newly independent Air Force further reduced the influence of R&D advocates. Upon taking command, Spaatz streamlined his staff and reduced the number of positions from 13 to seven.⁶³ Previously R&D had been a principle staff position; the reorganization buried its director under the deputy chief of staff for materiel.⁶⁴ Likewise, the new Air Force organizational chart portrayed the SAB as a functional organization under the DCS/M, instead of a direct report to the chief of staff.⁶⁵ Taken

⁵⁹ Quoted in James H. Straubel, *Crusade for Airpower: The Story of the Air Force Association* (Washington, DC: Aerospace Education Foundation, 1982), 46.

⁶⁰ Bernard A. Schriever, Richard H. Kohn, and Jacob Neufeld, *Reflections on research and development in the United States Air Force: an interview with General Bernard A. Schriever, and Generals Samuel C. Phillips, Robert T. Marsh, and James H. Doolittle, and Dr. Ivan A. Getting* (Washington, DC: Center for Air Force History, 1993), 50.

⁶¹ Quoted in Sturm, *The USAF Scientific Advisory Board*, 19.

⁶² Sturm, *The USAF Scientific Advisory Board*, 18; For example, LeMay cited the SAB in defense of his R&D program during Congressional testimony, 80th Congress, 1st Session. *Military Establishment Appropriations Bill for 1948, House of Representative*, 604.

⁶³ Mets, *Master of Airpower*, 325

⁶⁴ Mets, *Master of Airpower*, 324-325.

⁶⁵ Sturm, *The USAF Scientific Advisory Board*, 25 and Neil Sheehan, *A Fiery Peace in a Cold War: Bernard Schriever and the Ultimate Weapon* (New York: Random House, 2009), 126.

together, the lack of relevance compelled some SAB members, including Getting, to resign their positions in frustration.⁶⁶

In the late 1940s, the devaluing of R&D in the Air Force coupled with the the specter of a rising Soviet Union concerned Doolittle. His skepticism began while he commanded the Eighth Air Force in Europe. He attributed the failure of Operation Frantic to the lack of support from the USSR, and later assessed the cool reception his crews received by the Soviets as evidence the “Cold War was already in effect.”⁶⁷ Communist actions, which led to the Berlin airlift and formation of the North Atlantic Treaty Organization (NATO), further reinforced Doolittle’s suspicions. In 1948, on the back cover of his personal notebook he inscribed “We must come to terms with Russia – but *our* not *their* terms.”⁶⁸ Doolittle made his beliefs publicly known in a speech at Georgetown University. In a talk historian Eugene. M. Emme described as a “rather significant... rationalization of American power and American ideals,”⁶⁹ Doolittle poised two questions to the university’s alumni association: “Is war with Russia inevitable? And if it is not, how can it be avoided?”⁷⁰ Although Doolittle believed the Kremlin was “wholly evil,” he suggested war with the USSR was not inevitable.⁷¹ According to Doolittle, strong American air power and advancements in R&D could dissuade the Soviets from inciting conflict. The Airman declared, “only air power can deter

⁶⁶ Dwayne A. Day, *Lightning Rod: A History of the Air Force Chief of Scientist’s Office* (Washington, DC: Chief Scientist’s Office, 2000), 50.

⁶⁷ Operation Frantic was the planned shuttle bombing missions from England to Russia. Crews landed in Russia, refueled and returned to England. Heaton, Colin D. "Jimmy Doolittle: The Man Behind the Legend." *World War II* 17, no. 7: 30, 5. Retrieved from EBSCOhost.

⁶⁸ Emphasis in original. Entry on back cover, 1948 personal notebook, James H. Doolittle Papers, Series XVI, McDermott Library.

⁶⁹ General Jimmy Doolittle, Interview by E. M. Emme and W. D. Putnam, 21 April 1969, AFHRC call no. K239.0512-625, 12; Emme included an excerpt of the speech in his book Emme, Eugene E. *The Impact of Air Power: National Security and World Politics* (New York: D. Van Norstrand Company, 1959), 795.

⁷⁰ Remarks of J.H. Doolittle at Georgetown University Alumni Association, 30 April 1949, James H. Doolittle Papers, Series IV, Box 8, Folder 12, McDermott Library, 1.

⁷¹ Remarks of J.H. Doolittle at Georgetown University Alumni Association, 30 April 1949, James H. Doolittle Papers, Series IV, Box 8, Folder 12, McDermott Library, 1.

Russia.”⁷² Looking forward, Doolittle believed the “ultimate” deterrence weapon would harness atomic power “in a pilotless controlled air weapon which can go from the continental United States to any point on the Earth’s surface at supersonic speeds and be automatically directed to the target with extreme accuracy.”⁷³ With this objective in mind, Doolittle proclaimed, “Our fundamental aviation research and development should be organized and coordinated in such a way as always to be directed toward the eventual achievement of this ultimate objective.”⁷⁴

A contingent of rising officers in the Air Force also believed increased emphasis on R&D would strengthen national security. Director of Research and Development under the Deputy Chief of Staff for Materiel Major General Laurence C. Craigie was among the group. During the war, he became the first Air Force pilot to fly a jet aircraft and served as an assistant chief in the experimental engineering division of AMC.⁷⁵ Based on his wartime experiences, Craigie believed Air Force emphasis on production had become excessive.⁷⁶ With a shared interest, Craigie and von Karman lobbied within the system to increase the influence of R&D in the Air Force. They convinced Spaatz to restore the SAB’s stature as an organization that directly reported to the chief of staff.⁷⁷ To educate the board on scientific problems confronting the Air Force, the duo also persuaded Spaatz to appoint Craigie as a military director to the SAB. Formalized in the publication of Air Force Regulation (AFR) 20-30, the changes provided the SAB and its military

⁷² Remarks of J.H. Doolittle at Georgetown University Alumni Association, 30 April 1949, James H. Doolittle Papers, Series IV, Box 8, Folder 12, McDermott Library, 6.

⁷³ Remarks of J.H. Doolittle at Georgetown University Alumni Association, 30 April 1949, James H. Doolittle Papers, Series IV, Box 8, Folder 12, McDermott Library, 8.

⁷⁴ Remarks of J.H. Doolittle at Georgetown University Alumni Association, 30 April 1949, James H. Doolittle Papers, Series IV, Box 8, Folder 12, McDermott Library, 8.

⁷⁵ Craigie flew the Bell XP-59A in 1942. Sheehan, *A Fiery Peace in a Cold War*, 125.

⁷⁶ De Haven, Ethel M. *History of Separation of Research and Development Command from the Air Materiel Command*, Vol 1, 1954, AFHRC call no. K201-82, 21

⁷⁷ Sturm *The USAF Scientific Advisory Board*, 25-26 and Sheehan, *A Fiery Peace in a Cold War*, 126.

director direct access to the chief of staff.⁷⁸ Subsequent R&D advocates did not hesitate to exercise this avenue of influence.

In the fall of 1948, Craigie left to become commandant of the Air Force Institute of Technology (AFIT) and was replaced by another R&D advocate, Brigadier General Donald Putt. A former student of von Karman, Putt had an extensive R&D experience as the Chief of Experimental Bombardment Aircraft and Deputy Chief of Engineering during the war.⁷⁹ Described by an ARDC historian as a “scientist in uniform,” Putt had worked closely with the SAG during the exploitation of German technology as Air Technical Service Command’s (ATSC) director of foreign technology.⁸⁰ A firm believer in von Karman’s vision of technology, Putt presided over a staff consisting of Walkowicz and several other young R&D enthusiasts referred to as “young Turks.”⁸¹ Like Doolittle, Putt and his energetic staff believed preserving the national defense required reform of the incumbent Air Force structure.

Reviewing the evolution of R&D in the 1940s reveals that Doolittle’s ardent beliefs aligned with Arnold’s vision of technology and concepts resident in von Karman’s momentous work *Toward New Horizons*. America’s entry into the Cold War furthered Doolittle’s appreciation of qualitative superiority in the evolving nature of air power. Ironically, the commander who destroyed the Luftwaffe through an air battle of attrition believed technology would prevail over numbers in a subsequent war. More importantly, Doolittle understood that advanced technology provided a means of preventing a more destructive conflict.

⁷⁸ Sturm *The USAF Scientific Advisory Board*, 26.

⁷⁹ Gorn, *Harnessing the Genie*, 48. AFHRC call no. K201-82, 31; Wattendorf, Frank L. “Historic Aspects of the Oetzal (Modane) Wind Tunnel,” 22 October 1981, AFHRC call no. K168.15103, 6.

⁸⁰ *The First Five Years of the Air Research and Development Command* (Baltimore: Air Research and Development Command, 1955), 19; Wattendorf, Frank L. “Historic Aspects of the Oetzal (Modane) Wind Tunnel,” 22 October 1981, AFHRC call no. K168.15103, 6.

⁸¹ In oral interviews, Putt described the group as young Turks while General Bernard Schriever used the term young Indians. Major General Donald Putt, Interview by Dr. James C. Hasdorff, 1-3 April 1974, USAF Oral History Collection, AFHRC call no. K239.0512-724, 78.

Technical superiority in the air could deter the emerging Soviet threat. In 1949, however, Doolittle was not the only individual with this belief. Putt and his growing movement of insiders enlisted Doolittle's support for the R&D crusade. The conjoining of interests, combined with the SAB's access to the chief of staff, revolutionized R&D in the Air Force.

The Ridenour Report

On April 30th, 1948, Hoyt S. Vandenberg replaced Spaatz as the Air Force Chief of Staff. The choice did not surprise Doolittle, who considered "Van" the "the most promising young general" in the Army, at the end of World War II.⁸² As commander of the Twelfth Air Force, Doolittle had relied heavily on Vandenberg as his chief of staff and recommended the young colonel for promotion to brigadier general.⁸³ Following the assignment in North Africa, the two officers remained close and sought each other's counsel through regular correspondence. The friendship continued after the war and the duo became regular fishing and hunting companions.⁸⁴ Vandenberg's biographer, Phillip Meilinger, observed the two men "were kindred spirits in many respects and worked well together."⁸⁵ Their common view regarding the importance of R&D was no exception; Vandenberg believed in equipping airmen with the latest technology; hence, the chief of staff often consulted his former supervisor on matters concerning science and industry.⁸⁶

Indeed, the SAB received a significant amount of support from the new chief of staff. Although Vandenberg authorized AFR 20-30 in May, 1948, a subsequent review the SAB's record concluded "a large reservoir

⁸² Notes on Trip to Latin and South America (April 7 – May 6, 1946), James H. Doolittle Papers, Series IX, Box 1, Folder 6, McDermott Library, 22.

⁸³ Phillip S. Meilinger, *Hoyt S. Vandenberg: The Life of a General* (Indianapolis: Indiana University Press, 1989), 29-30, 33.

⁸⁴ Major General Donald Putt, Interview by Dr. James C. Hasdorff, 1-3 April 1974, USAF Oral History Collection, AFHRC call no. K239.0512-724, 81.

⁸⁵ Meilinger, *Hoyt S. Vandenberg*, 33.

⁸⁶ Meilinger, *Hoyt S. Vandenberg*, 153.

of potential utility of the SAB to the USAF remains untapped.”⁸⁷ The report found that limited financial and senior-level support for SAB recommendations undermined the committee’s effectiveness.⁸⁸

Sympathetic to the findings, Vandenberg directed his staff and the AMC commander to employ SAB recommendations as “guides in long-range USAF planning.”⁸⁹ Although Vandenberg could not promise additional funding, he mandated his subordinates report when conditions precluded the implementation of an SAB recommendation.⁹⁰

Vandenberg further supported the board by agreeing to a Putt request to address an SAB meeting on April 7, 1949. When the day arrived, however, Vandenberg instead attended an urgent meeting of the Joint Chiefs of Staff.⁹¹ Addressing the audience in lieu of Vandenberg was another “foresighted” R&D supporter, Air Force Vice Chief of Staff General Muir S. Fairchild.⁹² Reading a speech provided by Putt’s zealous staff, Fairchild began by declaring the “United States Air Force is well aware that continued technical superiority is one of the vital decisive elements in modern airpower.”⁹³ Accordingly, he stated the chief of staff “is determined to find means of placing additional emphasis on research and development.”⁹⁴ Fairchild acknowledged that the Air Force had faced significant “operational problems during the few years since the

⁸⁷ Quoted in Sturm, *The USAF Scientific Advisory Board*, 28.

⁸⁸ Quoted in Sturm, *The USAF Scientific Advisory Board*, 28.

⁸⁹ Quoted in Sturm, *The USAF Scientific Advisory Board*, 29.

⁹⁰ Sturm, *The USAF Scientific Advisory Board*, 29.

⁹¹ The Joint Chiefs were preparing to depart for Key West the following day. Scientific Advisory Board to the Chief of Staff, USAF, Excerpt from Minutes of Meeting held 7 April 1949, at the Pentagon, James H. Doolittle Papers, Box 28, Folder 169, Library of Congress.

⁹² Putt held Fairchild in high regard and credited Walkowicz with writing the speech. Major General Donald Putt, Interview by Dr. James C. Hasdorff, 1-3 April 1974, USAF Oral History Collection, AFHRC call no. K239.0512-724, 83.

⁹³ Major General Donald Putt, Interview by Dr. James C. Hasdorff, 1-3 April 1974, USAF Oral History Collection, AFHRC call no. K239.0512-724, 78-79; Scientific Advisory Board to the Chief of Staff, USAF, Excerpt from Minutes of Meeting held 7 April 1949, at the Pentagon, James H. Doolittle Papers, Box 28, Folder 169, Library of Congress.

⁹⁴ Scientific Advisory Board to the Chief of Staff, USAF, Excerpt from Minutes of Meeting held 7 April 1949, at the Pentagon, James H. Doolittle Papers, Box 28, Folder 169, Library of Congress.

end of the war,” but the service felt compelled to “now take an equally critical look at our equally important long-range technical objectives.”⁹⁵ The vice chief provided the SAB three directives: (1) outline an “ultimate plan” for research and development facilities and organization, (2) recommend budgetary policies to “insure maximum effectiveness of our research and development programs,” and (3) propose “personnel and administrative policies which will insure that our facilities are given proper leadership and are staffed by competent military and civilian technical personnel.”⁹⁶ In closing, Fairchild implored the board to provide “frank and objective advice on these perplexing problems.”⁹⁷ The R&D advocates had their charge.

Putt and von Karman quickly formed a “small group of consultants” to serve as a special committee of the SAB.⁹⁸ The two recruited men who possessed credibility with both the scientific community and the Air Staff. Von Karman invited University of Illinois professor Dr. Louis Ridenour to chair the investigation. Ridenour was no stranger to the Air Force and was well regarded in the service.⁹⁹ During the war he had led MIT’s esteemed Radiation Laboratory, advised the Secretary of War as an expert consultant, and served under Spaatz as chief of his Advisory Specialist Group, Strategic Forces in Europe.¹⁰⁰ Officially titled the “SAB Special Committee on Research and Development Facilities, Budget and Personnel,” the committee became

⁹⁵ Scientific Advisory Board to the Chief of Staff, USAF, Excerpt from Minutes of Meeting held 7 April 1949, at the Pentagon, James H. Doolittle Papers, Box 28, Folder 169, Library of Congress.

⁹⁶ Scientific Advisory Board to the Chief of Staff, USAF, Excerpt from Minutes of Meeting held 7 April 1949, at the Pentagon, James H. Doolittle Papers, Box 28, Folder 169, Library of Congress.

⁹⁷ Scientific Advisory Board to the Chief of Staff, USAF, Excerpt from Minutes of Meeting held 7 April 1949, at the Pentagon, James H. Doolittle Papers, Box 28, Folder 169, Library of Congress.

⁹⁸ Major General William McKee to Dr. Doolittle, letter, 13 June 1949, James H. Doolittle Papers, Box 28, Folder 169, Library of Congress.

⁹⁹ Stephen B. Johnson, *The United States Air Force and the Culture of Innovation, 1945-1965* (Washington, DC: Air Force History and Museums Program, 2002), 38.

¹⁰⁰ Day, *Lightning Rod*, 23-24.

commonly known as the Ridenour Committee in honor of its chair.¹⁰¹ Putt and von Karman also invited Jimmy Doolittle to serve on the committee as an unofficial co-chair.¹⁰² It was a wise decision.

Doolittle's beliefs and credentials made him an obvious choice to serve on the Ridenour Committee. Doolittle believed the Ridenour Committee provided a unique opportunity to advance the role of R&D in the nation's defense. In accepting the invitation to join the committee, he affirmed he was "extremely interested in United States Air Force research and development and frankly feel that in the consideration of present and future military requirements there has been a tendency in the recent past to slight future development in the interest of immediate strength."¹⁰³ Doolittle's membership on the Ridenour Committee endowed the study with instant credibility. His distinguished military career, academic credentials, and business experience offered the panel additional unique access to Air Force senior leaders and industry, and historian Stephen B. Johnson remarked, Doolittle "was well respected by all parties."¹⁰⁴ Reflecting on his role with the committee, Doolittle himself commented:

I was in a rather unique position, in that I had some military experience, some business experience and some technical experience. And General Spaatz and General Vandenberg were inclined to ask my advice on technical matters, so I think I was useful as a link between the military and the academic people. I could talk to them because I had had some academic training; I could talk to the military and I think I was useful in bridging that gap.¹⁰⁵

¹⁰¹ The other members of the committee included Wattendorf, James G. Baker, James B. Fisk, Carl F.J. Overhage, Ralph A. Sawyer, John M. Wild, and Raymond J. Woodrow. Report "Research and Development in the United States Air Force," 21 September 1949, AFHRC call no. K201-82 V2, A-5.

¹⁰² Major General William McKee to Dr. Doolittle, letter, 13 June 1949, James H. Doolittle Papers, Box 28, Folder 169, Library of Congress.

¹⁰³ Doolittle to Major General William McKee, letter, 5 July 1949, James H. Doolittle Papers, Box 28, Folder 169, Library of Congress.

¹⁰⁴ Johnson, *The United States Air Force and the Culture of Innovation*, 39.

¹⁰⁵ Lt General James H. Doolittle, Interview, 23 June 1965, USAF Oral History Collection, AFHRC call no. K239.0512-623, 27. see also Day, 11.

Ridenour often exhibited deference to Doolittle and during one meeting described his own position as the chairman of the Doolittle Committee.¹⁰⁶ Likewise, others recognized Doolittle's prominent role in the committee and often referred to the final report as the "Ridenour-Doolittle report."¹⁰⁷ Later in the year, Ridenour included Doolittle in the committee's formal presentations to Vandenberg and the Air Staff. He considered Doolittle's presence essential stating, "that it would be very effective and very desirable to have you join with me in briefing" the committee's ideas.¹⁰⁸

As the Air Force dispatched formal invitations to Ridenour Committee members, Putt capitalized on growing momentum to further the R&D argument. In a memo to Vandenberg, he argued the Air Force suffered from "a serious lack of proper emphasis on USAF research and development activities."¹⁰⁹ Invoking fear of interservice rivalry, Putt argued that the Navy maintained a technical workforce over twice the size of the Air Force's and significantly outspent the air service on R&D infrastructure.¹¹⁰ Putt asserted, "the long-range implications of these facts are very grave" and believed Vandenberg's attendance at the inaugural meeting of the Ridenour Committee would provide much-needed support for the project.¹¹¹ Despite Putt's convincing argument, the prospect of change within the Air Force bureaucracy was slim. Providing feedback on the memo, Assistant Vice Chief of Staff Major General William F. McKee wrote that Vandenberg and Fairchild were in

¹⁰⁶ Johnson, *The United States Air Force and the Culture of Innovation*, 39

¹⁰⁷ Schlatter to Doolittle, letter, 6 September 1950, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

¹⁰⁸ Ridenour to Doolittle, letter, 14 Oct 1949, James H. Doolittle Papers, Box 33, Folder 231, Library of Congress.

¹⁰⁹ Donald L. Putt to The Chief of Staff, memorandum, 24 May 1949, Office of CSAF, Special assistant to CSAF, Decimal file F0001, NARA RG341 S190 R66 C021 S03 Box 3 F000.1 Misc R&D

¹¹⁰ Donald L. Putt to The Chief of Staff, memorandum, 24 May 1949, Office of CSAF, Special assistant to CSAF, Decimal file F0001, NARA RG341 S190 R66 C021 S03 Box 3 F000.1 Misc R&D

¹¹¹ Donald L. Putt to The Chief of Staff, memorandum, 24 May 1949, Office of CSAF, Special assistant to CSAF, Decimal file F0001, NARA RG341 S190 R66 C021 S03 Box 3 F000.1 Misc R&D

general sympathetic with R&D advocates, there were limits, however, “as to how much can physically be done.”¹¹² This pessimistic assessment did not account for the influence of Jimmy Doolittle.

On July 10, 1949, Doolittle flew from New York to Washington to attend the first meeting of the Ridenour Committee.¹¹³ Vandenberg honored Putt’s request and opened the July 11 meeting by graciously welcoming the nine-member team. The chief of staff confessed, “we lack many aspects of the kind of help you can give us.” He further commented the Air Force had “no traditions or any inhibitions, because we are a new Department [and] we would like to start off research and development on the proper foot.” Vandenberg thus directed the committee to chart the future of Air Force R&D and determine “where do we go from here.” To support the team, the air chief placed his Air Staff at its disposal to “get the answers to any of the problems that you people want.”¹¹⁴

The committee commenced work immediately. In six weeks, the group met on over 40 occasions, visiting 12 military and government research facilities across the country. Because of his commitments with Shell, Doolittle attended only half the meetings, and toured nine of the research installations.¹¹⁵ Despite his frequent absences, Doolittle had an immense influence on the committee. For instance, in one meeting, Doolittle championed the committee’s work, telling others “I feel that the only thing that is going to keep us out of war, is our technological advantage,” a comment Ridenour described as a “dandy little pep

¹¹² William F. McKee to Gen Craig, memorandum, 21 June 1949, Office of CSAF, Special assistant to CSAF, Decimal file F0001, NARA RG341 S190 R66 C021 S03 Box 3 F000.1 Misc R&D

¹¹³ Logbook Entries, July 1949, Doolittle Papers, Series XVI, Logbook 14, McDermott Library

¹¹⁴ Quoted in Sturm, *The USAF Scientific Advisory Board*, 33.

¹¹⁵ Report “Research and Development in the United States Air Force,” 21 September 1949 AFHRC call no. K201-82 V2, A-7-A, 12; Logbook Entries, July-August 1949, Doolittle Papers, Series XVI, Logbook 14, McDermott Library; William F. McKee to Gen Craig, memorandum, 21 June 1949, Office of CSAF, Special assistant to CSAF, Decimal file F0001, NARA RG341 S190 R66 C021 S03 Box 3 F000.1 Misc R&D.

talk.”¹¹⁶ Similarly, while the team visited Muroc Air Force Base, Doolittle predicted “in a future war involving inter-continental guided missiles, the producer and his research and development organization will be decisive.” In this and other ways, Doolittle imparted his ardent belief the “Air Force must assume full and undivided responsibility for research and development in aircraft as well as controlled pilotless air weapons.”¹¹⁷

Doolittle also believed the Air Force’s most serious R&D shortfall resided in the lack of technically qualified personnel. The Airman explained to his fellow committee members that the problem was ingrained in Air Force culture. The MIT graduate reasoned the service’s emphasis on “operational skill rather than educational background goes back to the early twenties when the Army command showed little understanding of the needs of flying personnel.” Doolittle believed this culture fashioned a service in which less than 40 percent of the officer corps were college graduates. In contrast, 86 percent of naval officers possessed a college degree. To rectify the shortage of technical personnel, Doolittle suggested the committee consider five recommendations. First, he believed senior leaders required a better understanding of the importance of R&D and investment in technical personnel. He also stressed these priorities required “necessary sacrifices in current operations.” Second, he suggested recruiting as many scientifically trained personnel as possible from the Navy, service academies, and “good universities.” Third, to retain technical talent, Doolittle recommended improving the “prestige, promotion and decoration” of scientific personnel. Fourth, he believed the Air Force could better utilize its existing expertise with personnel policies that devoted technical talent to R&D efforts. Finally, Doolittle believed that

¹¹⁶ Quoted in Sturm, *The USAF Scientific Advisory Board*, 33-34.

¹¹⁷ C.F.J Overhage to Messrs. Ridenour, Doolittle, Fisk, Sawyer, Walkowicz, Wattendorf, Wild, Woodrow 5 Aug 1949, James H. Doolittle Papers, Box 28, Folder 169, Library of Congress.

the committee should consider increasing the number of R&D contracts with industry “to take advantage of the scientific manpower available in manufacturing organizations.”¹¹⁸

The former commander of the Eighth Air Force also shared his belief that R&D advancement required organizational reform. Doolittle submitted that the service’s technical activities had “followed a haphazard course” and structural change would “straighten out this erratic pattern.” He also believed in extracting R&D functions from AMC, proposing “there should be a Research and Development Command with like responsibility for the administration of contracts and the operations of facilities.”¹¹⁹ Doolittle recommended that a Deputy Chief of Staff for Research and Development “should be considered” to facilitate the management of technical programs on the staff. Only R&D independence from other Air Force functions, Doolittle stated, would enable “sacrifice from today’s continuing emergencies in order to prepare for tomorrow’s eventualities.”¹²⁰

Not surprisingly, Doolittle’s R&D convictions are evident in the Ridenour Committee findings. Dated September 21, 1949, the report concluded “that the existing organization, personnel policies, and budgetary practices do not allow the Air Force to secure the full and effective use of the scientific and technical resources of the nation.”¹²¹ Reflecting Doolittle’s assessment of the state of technology, the document asserted “the present seems to be a uniquely important time” to prioritize R&D because the “regime of practical supersonic flight is being entered, and advances in control and guidance mechanisms promise to make the

¹¹⁸ C.F.J. Overhage to Messrs. Ridenour, Doolittle, Fisk, Sawyer, Walkowicz, Wattendorf, Wild, Woodrow, letter, 5 Aug 1949, James H. Doolittle Papers, Box 28, Folder 169, Library of Congress, Washington, DC, 2.

¹¹⁹ C.F.J. Overhage to Messrs. Ridenour, Doolittle, Fisk, Sawyer, Walkowicz, Wattendorf, Wild, Woodrow, letter, 5 Aug 1949, James H. Doolittle Papers, Box 28, Folder 169, Library of Congress.

¹²⁰ Quoted in Sturm, *The USAF Scientific Advisory Board*, 34.

¹²¹ Report “Research and Development in the United States Air Force,” 21 September 1949, AFHRC call no. K201-82 V2, Letter 2.

long-range, accurate guided missile a reality.” Channeling another central Doolittle belief, the report invoked the threat of interservice rivalry in encouraging the Air Force to seize responsibility for developing this new technology. The committee reported that other services were pursuing “development of guided missiles, and are supporting their interest by means of research and development.”¹²² For example, an Army proposal to develop ground-to-ground and air-to-ground guided missiles threatened “a large share of the future mission of the Air Force.”¹²³ Hence, the report submitted that Air Force “preeminence” in this emerging field “can be earned only by sound achievement in research and development.”¹²⁴

In the Ridenour Report’s most controversial recommendation, the committee adopted Doolittle’s proposal for structural change in the Air Force bureaucracy. Endorsing the R&D advocate’s belief in organizational independence, the report concluded that technical progress required a separate agency charged with managing R&D. The committee, therefore, recommended the Air Force establish “a Research and Development Command that is separate from and independent of the Materiel Command.”¹²⁵ Correspondingly, the committee asserted such “an agency should be directed to prepare and defend its own budget.”¹²⁶ The report also included Doolittle’s suggestion for a Deputy Chief of Staff for Research and Development. Employing his argument verbatim, the report justified the new position, stating it would provide “adequate staff support for Air Force research and development

¹²² Report “Research and Development in the United States Air Force,” 21 September 1949, AFHRC call no. K201-82 V2, IV-1.

¹²³ Report “Research and Development in the United States Air Force,” 21 September 1949, AFHRC call no. K201-82 V2, IV-1-IV-2.

¹²⁴ Report “Research and Development in the United States Air Force,” 21 September 1949, AFHRC call no. K201-82 V2, IV-2.

¹²⁵ Report “Research and Development in the United States Air Force,” 21 September 1949, AFHRC call no. K201-82 V2, V-6.

¹²⁶ Report “Research and Development in the United States Air Force,” 21 September 1949, AFHRC call no. K201-82 V2, Letter 3.

activities.” Although the panel acknowledged that bureaucratic changes were no panacea, it believed restructuring would make “it easier to introduce the necessary improvements in personnel, program, and budget policy.”¹²⁷ The report also admitted the realignment may obfuscate the relationship between development and procurement, manufacture, and maintenance, and conceded that the many difficulties “in this particular liaison problem may demand increased attention after the separation of research and development from the Air Materiel Command.”¹²⁸ Time would prove this last sentiment prophetic.

The report also echoed Doolittle’s concern regarding the shortfall of technically proficient members in the Air Force R&D community. Citing a lack of officer progression as a causal factor, the board recommended personnel policies that promoted advancement and decoration for officers in R&D career fields.¹²⁹ Additionally, the report suggested the independent R&D agency maintain contract authority to sponsor joint research ventures with academia and industry.¹³⁰ Finally, to boost the number of technical degrees in the officer corps, the board suggested the Air Force grant predoctoral and postdoctoral fellowships and transform the Air Force Institute of Technology into a “graduate school of engineering ranking with the best civilian schools in this category.”¹³¹

The Ridenour Committee also introduced Doolittle to the concept of systems engineering. The board concluded AMC’s myopic focus on the development of individual aircraft components diminished overall system

¹²⁷ Report “Research and Development in the United States Air Force,” 21 September 1949, AFHRC call no. K201-82 V2, Conclusions 1.

¹²⁸ Report “Research and Development in the United States Air Force,” 21 September 1949, AFHRC call no. K201-82 V2, V-10.

¹²⁹ Report “Research and Development in the United States Air Force,” 21 September 1949, AFHRC call no. K201-82 V2, Conclusions 3-4.

¹³⁰ Report “Research and Development in the United States Air Force,” 21 September 1949, AFHRC call no. K201-82 V2, Conclusions 5-6.

¹³¹ Report “Research and Development in the United States Air Force,” 21 September 1949, AFHRC call no. K201-82 V2, Conclusions 6.

performance.¹³² Therefore, the final report recommended the Air Force adopt a comprehensive “systems engineering” approach to aircraft design. Instead of designing components in a serial manner, systems engineering proposed concurrent design of subcomponents with an emphasis on system integration.¹³³ Although the design philosophy incurred additional program risk, the committee believed that the managerial approach promoted innovation and argued “the role of systems engineering should be substantially strengthened.”¹³⁴ The team also acknowledged the preponderance of systems engineering knowledge resided outside the Air Force. Thus, the report recommended the Air Force achieve “effective industry cooperation by contracting...for the solution of system and sub-system problems.”¹³⁵ Doolittle later believed that introducing “systems engineering was one of the SAB’s more far-reaching and successful recommendations.”¹³⁶ The Ridenour Committee’s final report also represents the first instance in which Doolittle officially endorsed the concept of systems engineering. It would not be his last.

Doolittle’s editorial comments on the final report reflect his value to the Ridenour Committee as a former military commander. Unlike most academic professionals, Doolittle possessed significant insight into the Air Force bureaucracy and its biases. Thus, he advised eliminating “highly controversial” recommendations and conclusions from the Summary Table of Contents. Doolittle feared “critical readers” resident on the Air Staff and in AMC “may arrive at erroneous and irrevocable

¹³² Report “Research and Development in the United States Air Force,” 21 September 1949, AFHRC call no. K201-82 V2, IX-2.

¹³³ James H. Doolittle with Carroll V. Glines, *I Could Never Be So Lucky Again* (New York: Bantam Books, 1992), 475.

¹³⁴ Report “Research and Development in the United States Air Force,” 21 September 1949, AFHRC call no. K201-82 V2, IX-2.

¹³⁵ Report “Research and Development in the United States Air Force,” 21 September 1949, AFHRC call no. K201-82 V2, IX-3.

¹³⁶ Doolittle and Glines, *I Could Never Be So Lucky Again*, 475.

decisions before getting the supporting facts.”¹³⁷ Moreover, Doolittle provided advice on specific recommendations in the report. The draft, for instance, suggested implementing a decoration commensurate with the Legion of Merit to “reward outstanding individual achievement in research and development.”¹³⁸ Doolittle opined “the technical medal rate with or above the Legion of Merit” might “defeat our purpose.”¹³⁹ Instead, he suggested that a decoration “ranking with the DFC [Distinguished Flying Cross]” was the “highest we could possibly ask for with any likelihood of approval.”¹⁴⁰ Finally, two days before Ridenour submitted the final report to Vandenberg, Doolittle called Walkowicz and dictated a refined justification for a new Deputy Chief of Staff for Research and Development.¹⁴¹ Doolittle’s practical inputs increased the report’s persuasive potential.

Indeed, the Ridenour report provided a powerful and practical argument for change in the Air Force’s R&D establishment. Perhaps most importantly, it was well written. One senior official lauded the report’s “beautiful English” stating it “really summarized...the feelings that many of us had.”¹⁴² Moreover, the Ridenour Committee’s proposals had potential to produce enduring change in the Air Force bureaucracy, a monumental challenge. Political scientists Graham Allison and Philip Zelickow have argued that, although resistant to reform, large governmental organizations “are not impervious to directed change,” and careful “targeting of major factors that support routines—such as

¹³⁷ Doolittle to Walkowicz, letter, 31 Aug 1949, James H. Doolittle Papers, Box 28, Folder 169, Library of Congress.

¹³⁸ Report “Research and Development in the United States Air Force,” 21 September 1949, AFHRC call no. K201-82 V2, Conclusions 3.

¹³⁹ Doolittle to Major T. F. Walkowicz, letter, 31 Aug 1949, James H. Doolittle Papers, Box 28, Folder 169, Library of Congress.

¹⁴⁰ Doolittle to Major T. F. Walkowicz, letter, 31 Aug 1949, James H. Doolittle Papers, Box 28, Folder 169, Library of Congress.

¹⁴¹ Doolittle to Walkowicz, phone dictation “Headquarters Staff Agency,” 19 September 1949, James H. Doolittle Papers, Box 28, Folder 169, Library of Congress.

¹⁴² Quoted in Sturm, *The USAF Scientific Advisory Board*, 34.

personnel, rewards, information, and budgets—can effect major changes over time.”¹⁴³ Similarly, in his book *Winning the Next War: Innovation and the Modern Military*, Peter Stephen Rosen concluded, “peacetime military innovation occurs when respected military officers formulate a strategy for innovation, which has both intellectual and organizational components.”¹⁴⁴ Indeed, largely influenced by Doolittle’s contributions, the Ridenour Committee’s report presented an intellectual framework and suggested organizational change that “targeted” Alison and Zelikow’s bureaucratic levers.

The Ridenour Committee provided Doolittle a means of translating his beliefs into Air Force reform. Arnold’s legacy of the SAB’s access to the chief of staff offered him a bureaucratic avenue to communicate ideas to Vandenberg and the Air Staff. Additionally, Doolittle’s recommended changes to the Air Force’s structure and personnel systems indicate the Shell executive understood how to impart lasting change on a large military bureaucracy. Moreover, Doolittle’s formidable reputation in the military, industry, and academia endowed the Ridenour Committee’s controversial proposals with credibility. His experience as a senior-level commander also molded the committee’s report to resonate with influential members of the Air Staff.

Investigating Doolittle’s participation in the Ridenour Committee also demonstrates that he retained the capacity to learn. Although Doolittle clearly led the committee in formulating and advocating for its recommendations, he retained humility and openness to new ideas. Indeed, he embraced the theory of systems engineering. Henceforth, he served as a strong promoter of the managerial approach in the Air Force

¹⁴³ Graham Allison and Philip Zelikow, *Essence of Decision: Explaining the Cuban Missile Crisis* (New York, Longman, 1999), 181.

¹⁴⁴ Stephen Peter Rosen, *Winning the Next War: Innovation and the Modern Military* (Ithaca NY: Cornell University Press, 1991), 19.

and industry. The concept had lasting implications for the Air Force and Doolittle's personal career.

The Ridenour Committee's controversial recommendations, however, generated resistance from the Air Force establishment. Channeling Doolittle's ardent belief of the primacy of R&D, the report firmly asserted, "research and development activities cannot be brought to full effectiveness without making corresponding sacrifices elsewhere in the Air Force."¹⁴⁵ This impending threat to the budgetary and structural status quo prompted opposition from several factions within the Air Force bureaucracy. Indeed, the Ridenour report was a difficult sell to Air Force leaders, even a visionary commander such as Vandenberg. Fortunately, the "young Turks" had a premier salesman in Jimmy Doolittle.

The R&D Salesman

With the Ridenour report complete, Doolittle used his connections to promote the committee's findings. In a letter penned on August 26, 1949, Doolittle commented that the report "was a good effort but the real job will be in selling it."¹⁴⁶ Accordingly, Doolittle joined Ridenour to meet with Vandenberg on September 14 to present the committee's proposals.¹⁴⁷ Putt's staff encouraged Doolittle to lobby his former subordinate. Following a proposed meeting with the chief of staff, Walkowicz hinted, "Maybe General Vandenberg is going fishing that weekend and wants company?"¹⁴⁸ Doolittle required no such prompting—he had already invited Vandenberg and Secretary of the Air

¹⁴⁵ Report "Research and Development in the United States Air Force," 21 September 1949, AFHRC call no. K201-82 V2, Letter 5.

¹⁴⁶ Doolittle to Mrs. Arthur Raymond, letter, 26 August 1949, Box 28, Folder 169, Library of Congress.

¹⁴⁷ Doolittle to Walkowicz, letter, 31 August 1949, James H. Doolittle Papers, Box 28, Folder 169, Library of Congress and Logbook Entries, September 1949, Doolittle Papers, Series XVI, logbook 14, McDermott Library.

¹⁴⁸ Major General Donald Putt, Interview by Dr. James C. Hasdorff, 1-3 April 1974, USAF Oral History Collection, AFHRC call no. K239.0512-724, 78; Walkowicz to Doolittle, letter, 30 August 1949, James H. Doolittle Papers, Box 28, Folder 169, Library of Congress.

Force Stuart Symington to join him on a duck hunting trip in Canada.¹⁴⁹ Although the latter sent his regrets, Vandenberg obliged. The men had ample opportunity to discuss the ramifications of the report against the scenic backdrop of Waterhen Lodge and during the long flight back to New York aboard an Air Force B-17.¹⁵⁰ Although history is silent on the words exchanged in the duck blind, the chief of staff returned from the trip a supporter of the Ridenour report. In a letter dated November 1, 1949, Vandenberg told Doolittle “the report makes a lot of sense to me... [and] I am sure that your advice and suggestions will help insure the future effectiveness of American airpower.”¹⁵¹ Nonetheless, perhaps sensing bureaucratic resistance to the proposals, Vandenberg did not convey commitment. Instead he simply informed Doolittle “I have passed [the report] on to the Air Staff for study.”¹⁵²

Vandenberg’s reluctance to adopt the committee’s recommendations was not unexpected. As Meilinger observed in his biography of Vandenberg, the chief of staff was a “master at achieving” teamwork and was concerned that his subordinates “all worked together and toward the same goal.”¹⁵³ Not one to act “precipitously,” Vandenberg understood an immediate declaration supporting the recommendations of a civilian committee would incite unneeded division amongst his Air Staff. Therefore, in an effort to build consensus, Doolittle encouraged Vandenberg to commission a military panel for an additional review of R&D in the Air Force.¹⁵⁴ Vandenberg appointed a close associate of

¹⁴⁹ Although questioned by Sheehan, correspondence validates the “apocryphal” story of Doolittle traveling with Vandenberg to Canada. Sheehan, *A Fiery Peace in a Cold War*, 128; James Doolittle to General Vandenberg, letter, 12 Sep 1949, James H. Doolittle Papers, Box 33, Folder 231, Library of Congress see also Johnson, *The United States Air Force and the Culture of Innovation*, 37-38

¹⁵⁰ Logbook Entries, 4-5 October 1949, Doolittle Papers, Series XVI, logbook 14, McDermott Library.

¹⁵¹ Vandenberg to Doolittle, letter, 1 Nov 1949, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

¹⁵² Vandenberg to Doolittle, letter, 1 Nov 1949, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

¹⁵³ Meilinger, *Hoyt S. Vandenberg*, 203.

¹⁵⁴ Neufeld, *Research and Development in the United States Air Force*, 3.

Doolittle's, Major General Orville A. Anderson from Air University, to chair the committee. As discussed in a previous chapter, Anderson served as Doolittle's deputy commander for operations in the Eighth Air Force, and the two men maintained regular correspondence following the war. Like Doolittle, the commandant of the Air War College believed in "helping to mold the Air Force of the future."¹⁵⁵ Additionally, Putt characterized Anderson as "a real forward thinker" who understood "the part that research and development played."¹⁵⁶ Major General Putt, Brigadier General Ralph P. Swofford from AMC, and Colonel Keith K. Compton from the Air Proving Ground also served on the panel.¹⁵⁷ While the board conducted its study, Doolittle traveled continental Europe in support of Shell business interests.¹⁵⁸ Therefore, unlike the Ridenour Committee, he provided little direct input on the Air University report. Nonetheless, Doolittle's convictions are reflected in the panel's final conclusions.

Indeed, the committee's report, titled "Air University Study on Research and Development in the United States Air Force," endorsed the conclusions of the Ridenour Committee. Released shortly after the Soviet Union detonated its first atomic bomb, the report contended that the Air Force must "develop a technical competence which can effectively support its strategic understanding."¹⁵⁹ Hence, the report concluded, "We agree in principle with the findings and recommendations of [the Ridenour] report."¹⁶⁰ Therefore, the Air University study recommended

¹⁵⁵ Quoted in Official Biography of Major General Orvil Anderson, n.d. Retrieved from <http://www.af.mil/AboutUs/Biographies/Display/tabid/225/Article/107843/major-general-orvil-anderson.aspx>

¹⁵⁶ Major General Donald Putt, interview by Dr. James C. Hasdorff, 1-3 April 1974, USAF Oral History Collection, AFHRC call no. K239.0512-724, 82.

¹⁵⁷ Air University Study, "Research and Development in the United States Air Force," 18 November 1949, AFHRC call no. K239.047-10 C.1.

¹⁵⁸ Logbook Entries, October 1949, Doolittle Papers, Series XVI, Logbook 14, McDermott Library

¹⁵⁹ Air University Study, "Research and Development in the United States Air Force," 18 November 1949, AFHRC call no. K239.047-10 C.1, 4.

¹⁶⁰ Air University Study, "Research and Development in the United States Air Force," 18 November 1949, AFHRC call no. K239.047-10 C.1, 5.

the “*Immediate* establishment of a Deputy Chief of Staff, Development...[and] *Immediate* establishment of a Research and Development Command.”¹⁶¹ The military panel, however, also recommended the changes be implemented “on a carefully time-phased plan of an evolutionary rather than revolutionary nature” as to not place “undue burden on the existing structure and program, especially at the Air Materiel Command and in the Air Staff.”¹⁶² Air University Commander General George Kenney also provided a strong endorsement for structural change to enhance R&D. Kenney expressed grave concern “about the unsatisfactory state of Air Force Research and Development” and believed “that some remedial action, such as is recommended by the Ridenour Committee, is necessary if the Air Force is to play its proper part in the national defense.”¹⁶³

The threat of structural upheaval invoked significant furor in AMC’s various staff agencies.¹⁶⁴ Reflecting the view of many in the command, AMC Inspector General Brigadier General N. B. Harbold believed that the Ridenour Committee’s recommendations reflected a “somewhat Utopian viewpoint” and suggested renewed emphasis on R&D “is certainly correctable by means other than the major reorganization recommended.”¹⁶⁵ Nonetheless, perhaps aware of Vandenberg’s inclinations to approve Ridenour’s proposed changes, AMC began a series of studies to evaluate the feasibility of establishing a separate R&D command. Major General S. R. Brentnall, for instance, endorsed an evolutionary approach that limited the new command’s scope exclusively

¹⁶¹ Emphasis in original. Air University Study, “Research and Development in the United States Air Force,” 18 November 1949, AFHRC call no. K239.047-10 C.1, 5.

¹⁶² Emphasis in original. Air University Study, “Research and Development in the United States Air Force,” 18 November 1949, AFHRC call no. K239.047-10 C.1, 6.

¹⁶³ Kenney to Vandenberg, letter, 19 November 1949, AFHRC call no. K239.047-10 C.1.

¹⁶⁴ Sturm, *The USAF Scientific Advisory Board*, 35.

¹⁶⁵ Harbold to Street, memorandum “Report of the Special Committee of the SAB,” 5 December 1949, AFHRC call no. K201-82 V3.

to research.¹⁶⁶ The new “Research Command” would consist of “a [basic] research facility in Cambridge and the Office of Air Research.”¹⁶⁷ AMC argued its proposal would prevent the divergence of development, production, and sustainment of materiel.¹⁶⁸ The proposal also allowed AMC to retain the majority of its engineering expertise and budget authority.

The new Director of Requirements under the Deputy Chief of Staff for Operations, Major General Gordon P. Saville, however, did not concur with the AMC proposal. The former commander of Air Defense Command, was a “dissatisfied field operator,” who learned the value of scientists and engineers while overseeing the procurement of new air defense systems.¹⁶⁹ He, therefore, recommended the matter “be submitted to the Vice Chief of Staff as the basis for his guidance of future actions.”¹⁷⁰ Fairchild thus convened a meeting of the Air Staff on December 13, 1949. Differing proposals were presented with Brentnall representing the AMC position, and Putt advocating for more progressive structural reform. The latter’s vision of a Research and Development Command centralized engineering capacity in the new agency. When Fairchild solicited the Air Staff’s opinion, the group voted 13 to one in favor of AMC’s proposal.¹⁷¹ Putt departed the meeting thinking “Boy,

¹⁶⁶ Brentnall to Wolfe, memorandum “Air Research Command,” 3 December 1949, AFHRC call no. K201-82 V3.

¹⁶⁷ Text of a Briefing for General Schlatter Prior to the Staff Meeting of 3 January 1950, n.d., AFHRC call no. K201-82, V3, 2.

¹⁶⁸ Text of a Briefing for General Schlatter Prior to the Staff Meeting of 3 January 1950, n.d., AFHRC call no. K201-82, V3, 2.

¹⁶⁹ *The First Five Years of the Air Force Research and Development Command* (Baltimore: Air Research and Development Command, 1955), 19-20; Johnson, *The United States Air Force and the Culture of Innovation*, 39.

¹⁷⁰ Saville to Wolfe, memorandum “Implementation of Ridenour and Air University Reports on Research and Development,” 5 December 1949, AFHRC call no. K201-82 V3.

¹⁷¹ De Haven, Ethel M. *History of Separation of Research and Development Command from the Air Materiel Command*, Vol 1, 1954, AFHRC call no. K201-82, 74.

we've had it." Again, there appeared little likelihood of consequential change within the Air Force establishment.¹⁷²

Hence, Fairchild's January 3, 1950 announcement that Vandenberg "approved, in principle, the Ridenour Report and the Report of the Air University" reflects the influence of Doolittle and the SAB.¹⁷³ The decision surprised many on the Air Staff and exasperated officers in AMC. The command's frustration with the SAB's ability to circumvent the staff process is palpable in a 1954 account of the change. The AMC command historian stated the "separatists possessed, and used, their unusual channel of communication with the Chief of Staff himself, his advisory board on science."¹⁷⁴ The AMC history also attributes Doolittle's influence on the decision stating, "In one, Lieutenant General (Ret.), science and military strategy were already married. Even more useful to the Scientific Advisory Board was this eminent public man's third-perhaps primary—career; superlative salesmanship."¹⁷⁵ An ARDC historian also believed a "particularly important appointment" on the Ridenour Committee "was that of Dr. James H. Doolittle...for, as a scientist in his own right, he understood both the viewpoint of the scientists and needs of the military."¹⁷⁶ Getting likewise reminisced, "I don't think Ridenour's Report would have gotten anywhere had it not been for...Jimmy [Doolittle's] personal salesmanship."¹⁷⁷ Doolittle did not disagree. He later recollected that "my greatest activity in connection

¹⁷² Major General Donald Putt, Interview by Dr. James C. Hasdorff, 1-3 April 1974, USAF Oral History Collection, AFHRC call no. K239.0512-724, 87.

¹⁷³ Transcript of Proceedings, Air Staff, 3 January 1950, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 2.

¹⁷⁴ De Haven, Ethel M. *History of Separation of Research and Development Command from the Air Materiel Command*, Vol 1, 1954, AFHRC call no. K201-82, 78.

¹⁷⁵ De Haven, Ethel M. *History of Separation of Research and Development Command from the Air Materiel Command*, Vol 1, 1954, AFHRC call no. K201-82, 57.

¹⁷⁶ *The First Five Years of the Air Research and Development*, 18.

¹⁷⁷ Bernard A. Schriever, Richard H. Kohn, and Jacob Neufeld, *Reflections on research and development in the United States Air Force: an interview with General Bernard A. Schriever, and Generals Samuel C. Phillips, Robert T. Marsh, and James H. Doolittle, and Dr. Ivan A. Getting* (Washington, DC: Center for Air Force History, 1993), 40.

with the Ridenour report was to participate actively in its sale to the Chief of Staff.”¹⁷⁸

As the meeting of the Air Staff progressed, however, it became evident Vandenberg’s decision included concessions to the opposing factions. For instance, Fairchild invoked language from Air University announcing “the procedures of separating out Research and Development Command activities from those that are presently enmeshed in the Materiel Command shall be an evolutionary process, starting out with those that are the simplest to extract.”¹⁷⁹ Fairchild also highlighted difficulties “as to how to separate out the activities that are concerned with research and development from those that are concerned with production engineering.”¹⁸⁰ In an attempt to achieve consensus, Fairchild also announced an appeals process would accompany the restructuring. Implying that he would serve as the adjudicating authority, the vice chief pronounced, “I believe the implementing agencies should have the right of reclama to point out various difficulties and ramifications that may get us into trouble if we go along with the detailed and specific recommendations of the report.”¹⁸¹

Perhaps sensing Vandenberg’s reluctance to embrace the Ridenour report’s recommendations fully, Doolittle inquired about the specifics of the plan’s implementation. Direct to the point, Doolittle asked, “I would be interested to know...about the initial peeling off of functions into this new command and the rate at which the additional functions will be added to the initial Research and Development Command.” Fairchild

¹⁷⁸ Lt General James H. Doolittle, Interview, 23 June 1965, USAF Oral History Collection, AFHRC call no. K239.0512-623, 27. See also Day, *Lightning Rod*, 11.

¹⁷⁹ Transcript of Proceedings, Air Staff, 3 January 1950, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 1.

¹⁸⁰ Transcript of Proceedings, Air Staff, 3 January 1950, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 2.

¹⁸¹ Transcript of Proceedings, Air Staff, 3 January 1950, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 3.

conceded he had “no positive answer.”¹⁸² With the Chief of Staff’s authority present, Doolittle pressed for executive decisions about the immediate transfer of various R&D installations. Doolittle’s insistence prompted Vandenberg to intervene: “The problem as I see it is one like this, Jim. We are going to set it up just as rapidly as we can. You have to get the people to do it first. After you get the people, you have to have them go in and see how fast you can peel this off without hurting something too much.”¹⁸³ Vandenberg also did not believe in immediately sequestering the R&D budget, stating, “perhaps eventually, if everyone recommends it, the fiscal and the money part of this thing can be separated out.” Doolittle challenged his former subordinate on the latter point, “General Vandenberg, what do you mean by ‘everyone recommends it?’ I have never known anything to be unanimous in the Air Force.” Deflecting Doolittle’s appeal for an executive fiat, the able chief of staff responded, “Everyone who has gone along with this on what the decision has been, and the other people we don’t care about.”¹⁸⁴

Other bureaucratic hurdles to R&D innovation emerged as the meeting progressed. The Air Force comptroller, Lieutenant General Edward W. Rawlings, cautioned consolidating R&D into a single budget may have “just the opposite” of the intended effect.¹⁸⁵ Because funding from the production budget supported R&D activities, Rawlings suggested the change might be counterproductive. He estimated “in the order of fifty percent” of R&D efforts had been charged to a procurement account.¹⁸⁶ Rawlings also noted establishing a separate budget for R&D

¹⁸² Transcript of Proceedings, Air Staff, 3 January 1950, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 4.

¹⁸³ Transcript of Proceedings, Air Staff, 3 January 1950, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 7.

¹⁸⁴ Transcript of Proceedings, Air Staff, 3 January 1950, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 8.

¹⁸⁵ Transcript of Proceedings, Air Staff, 3 January 1950, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 22.

¹⁸⁶ Transcript of Proceedings, Air Staff, 3 January 1950, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 23.

would reduce financial flexibility. Doolittle countered by asserting “that is one of the reasons for doing it.” A sequestered R&D budget, according to Doolittle, would provide visibility into the amount of money invested into a consolidated R&D effort. The independent budget would also dampen the “inherent tendency to correct today’s pains with funds that should be set aside for tomorrow’s activities.”¹⁸⁷ Doolittle pursued his point further stating, “I think you have to be very careful to overemphasize the future if you are going to get anything done in the future, because today’s problems seem so tremendous.” Doolittle surmised today’s “toothache” always trumps tomorrow’s “smallpox.”¹⁸⁸

Conclusion

The Pentagon meeting reveals Doolittle’s tremendous influence on the decision to establish the Air Research and Development Command (ARDC). The compelling argument for change reflects his comprehensive understanding of the military bureaucracy, academia, and industry. Perhaps more significant, however, was his close relationship with Vandenberg. In the end Vandenberg trusted Doolittle’s judgment over that of his Air Staff, perhaps because both men shared similar views as to the future direction of the Air Force. It is also plausible that, in Vandenberg’s analysis, Doolittle’s impeccable reputation and charisma proved more persuasive than the AMC Staff’s resistance to change. Air Force Systems Command Historian Dr. Michael Gorn observed the “meeting reveals both the unpopularity of a stronger role for R&D, as well as the courage and political savvy of the winners of the debate.”¹⁸⁹ Whatever the reason, it is doubtful another individual could have

¹⁸⁷ Transcript of Proceedings, Air Staff, 3 January 1950, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 27.

¹⁸⁸ Transcript of Proceedings, Air Staff, 3 January 1950, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 35.

¹⁸⁹ Michael H. Gorn, *Vulcan’s Forge: The Making of an Air Force Command for Weapons Acquisition* (Andrews Air Force Base, MD: Headquarters, Air Force Systems Command, 1989), 16.

persuaded the chief of staff to impose a significant structural change on the Air Force.

As the meeting drew to a close, however, it became apparent that Doolittle's contribution to R&D reform was far from complete. With the decision to establish a separate research and development command behind him, Vandenberg understood he still had to impart change on the rigid Air Force bureaucracy. Accordingly, Vandenberg commented that the new command "to be set up right, has to have technical guidance of a very high quality." Therefore, the chief of staff asked the two visitors if he could "call you to come down here at some time and go over the current problems and keep your hand in this thing... if you would agree to do that, I think it would relieve all of our minds tremendously."¹⁹⁰ Indeed, the young R&D command required an institutional godfather to preside over its bureaucratic baptism. Doolittle assured his longtime friend, "I am on call."¹⁹¹ Vandenberg would not forget the response.

¹⁹⁰ Transcript of Proceedings, Air Staff, 3 January 1950, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 38.

¹⁹¹ Transcript of Proceedings, Air Staff, 3 January 1950, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 39.

Chapter 8

The Godfather of Air Force Research and Development

Security at Baltimore's Sheraton-Belvedere Hotel was tight on the morning of December 18, 1952.¹ The local venue was host to Air Research and Development Command's (ARDC) first conference with industry and academia. It was not a small affair. Over 230 representatives from across the research and development (R&D) enterprise crowded the hotel's main ballroom for a review of the Air Force's acquisition plan for the future.² Cognizant he would be addressing an "imposing...list of notables," the ARDC Commander, Lieutenant General Earle "Pat" Partridge, prepared meticulously for the event.³ Indeed, nearly all the commander's superiors and prominent captains of the defense industry were present. Partridge commenced proceedings with a keynote address on "the Systems Concept."⁴ The conference marked an important milestone for the nascent command and its ideology. Merely 18 months earlier, many in attendance questioned the command's existence. Present in the crowd, Dr. Jimmy Doolittle listened with pride and approval. In three short years, Doolittle's patronage had enabled the fledgling command to take root in the arid soil of entrenched government bureaucracy.

This chapter explores Doolittle's role in implementing structural change within the Air Force between 1950 and 1953. Why did many within the Air Force resist the decision to establish ARDC? Why did

¹ AP Wire Story, "No Clear-Cut 'Victory Day' In Korea, Air Force Aide Says," *Washington Post*, 19 December 1952. Retrieved from ProQuest.

² Industry-ARDC Meeting, 18-19 December 1952, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

³ Partridge to Doolittle, letter, 12 December 1952, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

⁴ Industry-ARDC Meeting, 18-19 December 1952, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

Vandenberg enlist Doolittle's assistance in implementing the reorganization? Did Doolittle's unique résumé of military and business experience provide an advantage in adjudicating bureaucratic conflict? Moreover, how did aircraft manufacturers respond to the Air Force's new research and development (R&D) structure? Did Doolittle's unique position as a business executive provide any gravitas in mediating objections? Finally, what are the lasting implications of Doolittle's influence in the evolution of R&D in the Air Force? The answers to these questions offer perspective into one of Doolittle's most significant and enduring contributions to air power.

The Bloody Reality of Bureaucratic Inertia

January 23, 1950 marked the birth of the Research and Development Command (RDC).⁵ In a memorandum sent to the Air Staff titled "Organization for Research and Development in the USAF," Air Force Vice Chief of Staff Muir Fairchild announced the decision to adopt the Ridenour report's recommendations for R&D and "modify the present organizational structure so as to give increased emphasis to this very important field of Air Force activity."⁶ Accordingly, Fairchild declared "there will be established a Research and Development Command."⁷ Concurrent with Fairchild's memorandum, the Air Force issued a press release announcing the reorganization. Addressing a public still coming to terms with the implications of a nuclear-armed Soviet Union, the statement announced Air Force Chief of Staff Hoyt Vandenberg was "placing emphasis on the Air Force long-range research and development

⁵ The Research and Development Command (RDC) subsequently was renamed the Air Research and Development Command (ARDC) on 16 September 1950. Ethel M. De Haven, *History of Separation of Research and Development Command from the Air Material Command*, Vol 1, 1954, AFHRC call no. K201-82, 188.

⁶ Fairchild to Air Staff, memorandum "Organization for Research and Development in the USAF," 23 January 1950, AFHRC call no. K201-82 Vol 3.

⁷ Fairchild to Air Staff, memorandum "Organization for Research and Development in the USAF," 23 January 1950, AFHRC call no. K201-82 Vol 3.

activities.”⁸ Accordingly, Vandenberg selected a man with extensive knowledge of the emerging threat to command the new organization – Assistant Deputy Chief of Staff, Operations for Atomic Energy Major General David M. Schlatter.⁹

The press release also announced the immediate establishment of a Deputy Chief of Staff, Development (DCS/D). Fairchild directed the new Air Staff position to assume the duties of “the Directorate of Requirements, the Directorate of Research and Development, and eventually all other Air Staff technical and tactical development activities.”¹⁰ Although, the Ridenour report had not suggested combining the two functions, the Director of Requirements within the Deputy Chief of Staff for Operations, Major General Gordon P. Saville, successfully argued a “deputy for the future” should oversee all Air Force requirements, reasoning “the only man in this Headquarters who is fighting for and can prove the requirements of the Air Force of the future” needed to understand “the requirements for today.”¹¹ Doolittle endorsed Saville’s argument and agreed the arrangement would help “fight for the future.”¹² Not surprisingly, Vandenberg concurred with Doolittle’s judgment and tapped Saville to become the first DCS/D.¹³ Doolittle

⁸ Ethel M. De Haven, *History of Separation of Research and Development Command from the Air Material Command*, Vol 1, 1954, AFHRC call no. K201-82, 80-81; Department of Defense Office of Public Information, Press release, 23 January 1950, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

⁹ Official Biography of Major General David M. Schlatter, September 1957. Retrieved from <http://www.af.mil/AboutUs/Biographies/Display/tabid/225/Article/105697/lieutenant-general-david-m-schlatter.aspx>. 22 March 2016.

¹⁰ Fairchild to Air Staff, memorandum “Organization for Research and Development in the USAF,” 23 January 1950, AFHRC call no. K201-82 Vol 3.

¹¹ Transcript of Proceedings, Air Staff, 3 January 1950, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 42.

¹² Transcript of Proceedings, Air Staff, 3 January 1950, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 36.

¹³ History of the Deputy Chief of Staff, Development, 1 July 1949 – 30 June 1950, AFHRC call no. K140.01 V.1., 3.

approved of the choice, noting Saville was “an excellent selection for the very important job.”¹⁴

Fairchild’s edict, however, failed to provide a detailed implementation plan. Despite Doolittle’s prodding during the January 3, 1950 meeting, the vice chief of staff’s direction was expansive in scope but thin on detail. The memorandum declared the RDC would “ultimately” assume control of “all USAF R&D field activities” but did not provide a functional timeline for the reorganization. Moreover, the memo vaguely listed functions and facilities that the new command “may eventually” acquire. Fairchild proposed consolidating Air Force engineering functions under the new command, stating it “is visualized that the R&D activities of the Engineering Division, Air Materiel Command, will be assumed by the Research and Development Command.”¹⁵ The vice chief of staff, however, tempered expectations by declaring the transfer would constitute “perhaps the last stop in the implementing action.”¹⁶ Finally, a significant allocation of resources did not accompany the vice chief of staff’s momentous announcement. Fairchild stated that the new RDC “headquarters will initially consist of a small group which will program for and progressively assume the responsibilities and functions appropriate to the Command.” Accordingly, Schlatter presided over a small staff consisting of 10 officers and 20 civilians.¹⁷

The lack of details concerned Vandenberg’s civilian superiors. Secretary of the Air Force W. Stuart Symington wrote the chief of staff expressing reservations, “To date there is no detailed paper showing

¹⁴ Doolittle to Walkowicz, 3 March 1950, James H. Doolittle Papers, Box 28, Folder 169, Library of Congress.

¹⁵ Fairchild to Air Staff, memorandum “Organization for Research and Development in the USAF,” 23 January 1950, AFHRC call no. K201-82 Vol 3.

¹⁶ Fairchild to Air Staff, memorandum “Organization for Research and Development in the USAF,” 23 January 1950, AFHRC call no. K201-82 Vol 3.

¹⁷ Fairchild to Air Staff, memorandum “Organization for Research and Development in the USAF,” 23 January 1950, AFHRC call no. K201-82 Vol 3.

exactly what is to be done; who and what leaves Wright Field, where it goes, etc.” The secretary summed up his apprehensions stating, “In private business a comparable operation is the most difficult... At best this is going to be an extremely difficult operation.”¹⁸ Likewise, Assistant Secretary of the Air Force Eugene M. Zuckert wrote Fairchild of his concerns stating, “we agree on the need for taking the step, except that I am probably more doubtful than you are about the extent to which the basis of our agreement and concern is understood by those who will have to carry out the job.”¹⁹

Likewise, Air Materiel Command (AMC) questioned the wisdom of Vandenberg’s decision. AMC compared the reorganization to separating Siamese twins – a delicate operation that would likely kill both patients. The command believed the functions of R&D and production were intricately linked, and separating the functions generated needless duplication and cost.²⁰ Moreover, the division incited debate over when an acquisition program exited the development phase and began production. The complex Air Force bureaucracy required clear delineation as to when RDC transferred program-management functions to AMC. How did the Air Force define “development”? The answer determined who would control the limited amount of engineering capacity resident in the Air Force.

Vandenberg visited AMC headquarters presumably to assuage fears of the upcoming organizational change. AMC interpreted the trip as an endorsement of the command’s position. Deputy Commanding General Major General St. Clair Streett remembered the visit by noting Vandenberg merely intended to establish a “Research Command.” The

¹⁸ Symington to Vandenberg, letter, 28 January 1950, AFHRC call no. K201-82, Vol 3.

¹⁹ Zuckert to Fairchild, Memorandum “Establishment of D/CS for Development and a Research Command,” 23 January 1950, AFHRC call no. K201-82, Vol 3.

²⁰ Ethel M. De Haven, History of Separation of Research and Development Command from the Air Materiel Command, Vol 1, 1954, AFHRC call no. K201-82, 69.

chief of staff's comments implied development functions would remain under AMC's purview. Streett also noted that Vandenberg did not intend "to permit the dismembering of the Research and Development Directorate of AMC merely to satisfy the requirement of a new organization, that he wished...in no way [to] interfere with the solution of the engineering problems."²¹ In other words, AMC believed "it would have its day in court" to challenge any modification of its structure or budget.²²

Air Force resistance to RDC is consistent with norms of bureaucratic behavior. Unlike other commands, which required support from other agencies, AMC controlled all functions required for its assigned mission. The arrangement made it the only "self sufficient" command in the Air Force.²³ Moreover, because AMC controlled a vast majority of the Air Force budget, it enjoyed significant influence within the Pentagon and industry.²⁴ In their book, *Essence of Decision: Explaining the Cuban Missile Crisis*, Graham Allison and Philip Zelikow note that "most organizations define the central goal of 'health' as synonymous with 'autonomy.'"²⁵ Allison and Zelikow also contend that large organizations resist changes to funding sources. Therefore, the authors advise that efforts affecting "large budgetary shifts in a single year between organizations...should be hedged."²⁶ RDC's existence threatened AMC's autonomy and budget. Moreover, the lack of clear direction from the Air Staff induced confusion and legitimized AMC's

²¹ St. Clair Street, memorandum for record "General Vandenberg's Comments on the Air Research Command, 13 January 1950, AFHRC call no. K201-82, Vol 3.

²² Ethel M. De Haven, *History of Separation of Research and Development Command from the Air Material Command*, Vol 1, 1954, AFHRC call no. K201-82, 80.

²³ *The First Five Years of the Air Research and Development Command* (Baltimore: Air Research and Development Command, 1955): 16.

²⁴ Ethel M. De Haven, *History of Separation of Research and Development Command from the Air Material Command*, Vol 1, 1954, AFHRC call no. K201-82, 43.

²⁵ Graham Allison and Philip Zelikow, *Essence of Decision: Explaining the Cuban Missile Crisis* (New York, Longman, 1999): 181.

²⁶ Allison and Zelikow, *Essence of Decision*, 180.

obstinacy. Indeed, bureaucratic resistance soon compelled Major Theodore “Teddy” Walkowicz to tell Doolittle, “implementation of the Ridenour Report has left the realm of philosophy and entered the realm of *bloody* realism.”²⁷

While Doolittle embarked on another tour of South American Shell facilities, Fairchild assembled the disparate stakeholders to formulate a reorganization plan.²⁸ The list of attendees for the January 30, 1950 meeting included Deputy Chief of Staff for Materiel Lieutenant General K. B. Wolf, Major General Donald Putt, Saville, and Schlatter.²⁹ The parties agreed that in “every case staff clarification at Headquarters, USAF level should precede implementation in the field.”³⁰ The decision assured AMC of its appeal rights to Fairchild. The following day, the vice chief sent a memorandum to Zuckert explaining his plan. Fairchild acknowledged the reorganization would be the “most difficult and delicate internal reorganization the Air Force has ever attempted.”³¹ Nonetheless, Fairchild considered the effort necessary and cited Doolittle’s assessment that structural change was required to prevent a “disastrous future.”³² The vice chief also assured that he had directed “every case where complete agreement is not obtained at the working level, the matter be referred to me.”³³ In other words, Fairchild assumed responsibility for implementing Vandenberg’s vision of change.

²⁷ Emphasis in original. Walkowicz to Doolittle, handwritten letter, 26 February 1950, James H. Doolittle Papers, Box 28, Folder 169, Library of Congress.

²⁸ Logbook entries January 1950, James H. Doolittle Papers, Series XVI, logbook 14, McDermott Library; Harold R. Maddux, memorandum for record “Meeting in the Office of the Vice Chief of Staff,” 30 January 1950, AFHRC call no. K201-82, Vol 3.

²⁹ Harold R. Maddux, memorandum for record “Meeting in the Office of the Vice Chief of Staff,” 30 January 1950, AFHRC call no. K201-82, Vol 3.

³⁰ Harold R. Maddux, memorandum for Record “Meeting in the Office of the Vice Chief of Staff,” 30 January 1950, AFHRC call no. K201-82, Vol 3.

³¹ Fairchild to Zuckert, memorandum “Establishment of Deputy Chief of Staff for Development, and a Research Command,” 1 February 1950, AFHRC call no. K201-82, Vol 3.

³² Fairchild to Zuckert, memorandum “Establishment of Deputy Chief of Staff for Development, and a Research Command,” 1 February 1950, AFHRC call no. K201-82, Vol 3.

³³ Fairchild to Zuckert, memorandum “Establishment of Deputy Chief of Staff for Development, and a Research Command,” 1 February 1950, AFHRC call no. K201-82, Vol 3.

Under Fairchild's direction, Saville assembled a "task force" of representatives from the Air Staff to advance the implementation plan.³⁴ Saville immediately sought Doolittle's counsel. The new DCS/D believed it "essential to have civilian scientific influence present in this planning group from the very beginning."³⁵ Doolittle helped Saville secure the services of Dr. Carl F. J. Overhage of Eastman Kodak and also offered, "You know that I am always available, within time limitations, whenever I can be helpful to you."³⁶

Similarly, Doolittle collaborated with Ridenour in crafting a letter to secretary Symington. Written shortly after Vandenberg's decision to accept the Ridenour report's recommendation, the memo is two authors attempt to "drive some more nails into the new research and development structure."³⁷ Again, Ridenour relied on Doolittle's intimate knowledge of the Air Force. Because "Symington is very sensitive to criticism," Doolittle recommended softening the five-page letter's pointed verbiage "to make [the argument] more palatable." He also modified its language to "assume that they are going to take the necessary remedial action." The former boxer concluded his counsel by stating the letter "to Symington is important and will be helpful... We gotta keep punching!"³⁸

The letter garnered an encouraging response from the Secretary of the Air Force. Despite his previous reservations, Symington expressed commitment: "We are going to follow through this reorganization with the necessary policies to give us a consistent and continuous research and development program." The secretary also acknowledged the changes

³⁴ Maddux, Harold R. memorandum for Record "Meeting in the Office of the Vice Chief of Staff, Monday, 30 January 1950, AFHRC call no. K201-82, Vol 3.

³⁵ Saville to Doolittle, letter, 31 January 1950, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

³⁶ Doolittle to Saville, letter, 7 February 1950, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

³⁷ Ridenour to Doolittle, letter, 6 January 1950, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

³⁸ Doolittle to Ridenour, letter, 9 January 1950, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

would not be without cost, “We are aware that this will require more money than we have previously devoted to research and development and greater attention to personnel and management problems, but we are convinced it must be done.”³⁹ The secretary’s response reflects confidence in Fairchild’s ability to serve as the bureaucratic implementer. An ARDC history observes, the vice chief “had the courage and authority to put across unpopular but vitally needed reforms.”⁴⁰ Sadly, his stabilizing presence did not last.

The implementation of RDC suffered a tragic setback when Fairchild died of a heart attack in his home on March 17, 1950.⁴¹ Major General Donald Putt considered Fairchild an essential ally, commenting he was “a very foresighted individual” who “saw the merit” in effort to reform R&D in the Air Force.⁴² With Fairchild’s death, Deputy Chief of Staff, Operations, Lieutenant General Lauris Norstad assumed duties as the acting vice chief of staff. Norstad, however, had little time or interest in championing the R&D command. Writing shortly before his death, Fairchild noted Norstad was “perhaps the most overburdened of any of our key personnel.”⁴³ With a key advocate gone, Schlatter turned to Doolittle for help in forging his new command. He lamented that Fairchild’s passing had “sure left a hole in the team” and “set us all back until we could close ranks again.” Accordingly, Schlatter remarked, “I will be most appreciative of an assist now and then from you, since your knowledge and viewpoint on this subject is quite unique.”⁴⁴ Doolittle

³⁹ Symington to Ridenour, letter, 25 February 1950, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

⁴⁰ *The First Five Years of the Air Research and Development Command*, 20.

⁴¹ Biography of General Muir S. Fairchild, U.S Air Force. Retrieved from <http://www.af.mil/AboutUs/Biographies/Display/tabid/225/Article/107112/general-muir-s-fairchild.aspx>.

⁴² Major General Donald Putt, Interview by Dr. James C. Hasdorff, 1-3 April 1974, USAF Oral History Collection, AFHRC call no. K239.0512-724, 96.

⁴³ Fairchild to Zuckert, memorandum “Establishment of Deputy Chief of Staff for Development, and a Research Command,” 1 February 1950, AFHRC call no. K201-82, Vol 3.

⁴⁴ Schlatter to Doolittle, letter, 6 September 1950, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

responded promptly and listed dates he was available to provide counsel in person.⁴⁵ The exchange sparked a close relationship that shaped the young command's growth.

The leadership void created by Fairchild's absence exacerbated tensions between AMC and the fledgling RDC. Upon assuming command, Schlatter endorsed a gradual transition of R&D functions from AMC. He proposed RDC commence full operational duties on July 1, 1951. To achieve this goal, Schlatter suggested the transition begin no later than October 1, 1950.⁴⁶ Progress, however, "all but halted" by April, 1950.⁴⁷ The undermanned RDC staff attributed the lack of headway to the unresponsive AMC bureaucracy.⁴⁸ Consequently, Schlatter soon lost confidence in the phased transition plan. In June he instead suggested a dramatic one-time takeover of AMC's R&D directorate on September 1, 1950.⁴⁹ The new proposal consolidated engineering functions under ARDC, which would allow the command to "become operational with a going concern on which to build a broader more competent structure."⁵⁰ Schlatter assured Vandenberg his plan provided "the best solution for the Air Force as a whole."⁵¹

Not surprisingly, AMC viewed the situation differently. AMC attributed the delay in progress to RDC's inability to conduct detailed transition planning.⁵² Indeed, the 31 AMC members assigned to the

⁴⁵ Doolittle to Schlatter, letter, 12 September 1950, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

⁴⁶ Schlatter to Nugent, Boatner, Smith, Putt, and Shepard, memorandum "Assumption of Command Responsibilities," 24 March 1951, AFHRC call no. K201-82 Vol 3.

⁴⁷ *The First Five Years of the Air Research and Development Command*, 22.

⁴⁸ Michael H. Gorn, *Vulcan's Forge: The Making of an Air Force Command for Weapons Acquisition* (Andrews Air Force Base, MD: Headquarters, Air Force Systems Command, 1989), 17.

⁴⁹ Schlatter to Chief of Staff, memorandum "Assumption of Command Jurisdiction," 30 June 1950, AFHRC call no. K201-82 Vol 3.

⁵⁰ Schlatter to Doolittle, letter, 6 September 1950, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

⁵¹ Schlatter to Chief of Staff, memorandum "Assumption of Command Jurisdiction," 30 June 1950, AFHRC call no. K201-82 Vol 3.

⁵² Ethel M. De Haven, *History of Separation of Research and Development Command from the Air Material Command*, Vol 1, 1954, AFHRC call no. K201-82, 88-89.

transition-planning team rivaled the size of RDC's entire staff.⁵³ Moreover, AMC claimed ambiguity over the meaning of "development" precluded the delineation of command responsibilities.⁵⁴ Finally, AMC believed the assumptions underlying Vandenberg's decision fundamentally changed when North Korea invaded its southern neighbor on June 25, 1950. It contended that an abrupt change in structure would endanger support for operational units engaged in the unexpected war.⁵⁵ An internal study of Schlatter's proposal concluded, "a one time take-over of AMC R&D is not only impractical and unbusinesslike [sic] but would seriously interfere with the coordinated accomplishment of R&D production and in-service engineering."⁵⁶ Accordingly, AMC claimed the one-time takeover "completely by-passes an objective analysis of the real problems involved."⁵⁷

Similar tensions emerged among general officers. In a letter to Doolittle, Schlatter doubted he would reach agreement with AMC Commander, General Benjamin Chidlaw. The RDC commander believed the opposition could "have no other view since they are so completely 'production-minded' that the main philosophy of the situation escapes them."⁵⁸ Doolittle replied with sympathy stating, "Sorry to learn that the organization of the Research and Development Command is not going entirely smoothly and that there is some opposition to the plan

⁵³ MCGO to Research and Development Command Planning Team, routing and record sheet, 8 May 1950, AFHRC call no. K201-82, Vol 3.

⁵⁴ Ethel M. De Haven, *History of Separation of Research and Development Command from the Air Material Command*, Vol 1, 1954, AFHRC call no. K201-82, 87.

⁵⁵ Ethel M. De Haven, *History of Separation of Research and Development Command from the Air Material Command*, Vol 1, 1954, AFHRC call no. K201-82, 100-101.

⁵⁶ Eckert to MCGO and MCC, memorandum "Study on Assumption of Command Jurisdiction, Research and Development Command," 11 July 1950, AFHRC call no. K201-82 Vol 3.

⁵⁷ Swofford, Mundy, Bradley, Eckert, and McGregor to MCGO, memorandum "Report of AMC Committee Appointed to Study the Division of Resources between RDC and AMC," 26 July 1950, AFHRC call no. K201-82 Vol 3.

⁵⁸ Schlatter to Doolittle, letter, 28 September 1950, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

recommended by the Ridenour Board. Sorry, but not surprised.”⁵⁹ On the Air Staff, Deputy Chief of Staff for Materiel (DCS/M) Lieutenant General K. B. Wolfe and Saville also disagreed on the transition plan. The entrenched positions compelled the DCS/D to write, “I feel, and so does Norstad, that *no* action...should be taken until the USAF *knows* exactly *what* RDC is going to do and *when*.”⁶⁰ Likewise, Wolfe wrote the vice chief of staff stating, “recommend that no action be taken on this matter until the Chief of Staff calls a meeting of the interested parties.”⁶¹

Meanwhile, Vandenberg increasingly relied on Doolittle’s counsel. In June 1950, the chief of staff invited Doolittle to to serve as Vice Chairman of the Scientific Advisory Board. Saville dispatched the formal invitation noting Doolittle’s “broad experience and marked accomplishments equip you exceptionally well to the Air Force in this capacity.”⁶² Doolittle graciously agreed to serve alongside of Dr. Mervin J. Kelly, Executive Vice President, Bell Telephone Laboratories as a vice chairman. Doolittle, however, did express concern that his ever-growing list of commitments precluded him from devoting “more than one, or at the outside, two full working days in Washington or elsewhere per month.”⁶³

Nonetheless, Doolittle honored a Vandenberg request to travel to East Asia and provide an assessment of air operations in the Korean War. A number of unsatisfactory reports on the quality of close air support concerned the chief of staff, and he desired Doolittle’s informed opinion on the matter. Indeed, Vandenberg’s biographer, Phillip

⁵⁹ Doolittle to Schlatter, letter, 6 September 1950, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

⁶⁰ Emphasis in original. Saville to Ridenour, handwritten letter, 12 August 1950, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command.

⁶¹ Wolf and Saville, staff summary sheet “Assumption of Command Jurisdiction, Air Research and Development Command,” 6 October 1950, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command.

⁶² Saville to Doolittle, 15 June 1950, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

⁶³ Doolittle to Saville, 23 June 1950, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

Meilinger noted “Doolittle’s reputation, popularity, and expertise made him ideal for the task.”⁶⁴ The visit provided Doolittle an opportunity to visit with Lieutenant General Partridge who had assumed command of the Fifth Air Force headquartered in Japan. Partridge’s original mission was air defense of Japan, and he accordingly presided over a force of F-51, F-80, and F-82 fighters.⁶⁵ When Doolittle arrived in July of 1950, the Fifth Air Force was adapting to the ground-support mission. Not surprisingly, Doolittle expressed confidence in the air superiority operations and the ongoing interdiction campaign. He, however, identified problems similar to the ones he had faced six-years prior as the commander of the Eighth Air Force. The Far East Air Force (FEAF) lacked air planners with tactical expertise, and operations suffered because of inadequate coordination with ground forces.⁶⁶ Doolittle reported that “it was again forcibly brought to our attention that a tactical air force cannot properly support the ground units without perfect communication and complete mutual understanding.”⁶⁷ Vandenberg responded to the sage advice by dispatching the former World War II commander of the XIX Tactical Air Command, Major General Opie Weyland, to provide the FEAF much needed experience in coordinating air-support operations.⁶⁸ Partridge also ultimately relocated his headquarters to Korea to better coordinate air operations with ground forces.⁶⁹

The trip to East Asia also affirmed Doolittle’s belief in the importance of R&D. He deplored the American force’s inability to operate past dusk, commenting an “air force which operates in the day time only

⁶⁴ Phillip S. Meilinger, *Hoyt S. Vandenberg: The Life of a General* (Indianapolis: Indiana University Press, 1989), 169.

⁶⁵ Meilinger, *Hoyt S. Vandenberg*, 163.

⁶⁶ Meilinger, *Hoyt S. Vandenberg*, 169.

⁶⁷ Doolittle to Putt, letter, 11 August 1950, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

⁶⁸ Meilinger, *Hoyt S. Vandenberg*, 169.

⁶⁹ Meilinger, *Hoyt S. Vandenberg*, 170.

is only half an air force.”⁷⁰ Doolittle believed the Air Force required technology to enable its pilots to operate effectively under the cover of darkness. He therefore wrote Putt stating, “I am afraid that before the operating boys can properly do their job we are going to have to give them some new tools.” Doolittle presciently declared, “if a tactical air force is to be 100 per cent successful, effective reconnaissance, close support and destruction must be carried out at night, despite the handicap of darkness.”⁷¹

When Doolittle returned from his six-week tour of East Asia, Vandenberg invited him to attend a meeting to review ARDC responsibilities. On September 26, 1950, a date which accommodated the Shell executive’s demanding schedule, the competing commands submitted their arguments for adjudication by the chief of staff.⁷² Doolittle assumed the position of mediator and guided the meeting with comments that were “clear and to the point.”⁷³ Schlatter argued only a decisive transition of responsibilities would overcome AMC’s passive resistance. Chidlaw demurred and highlighted the costly ramifications of Schlatter’s proposal. Chidlaw also suggested Vandenberg seek counsel with industry before finalizing his decision. Vandenberg agreed and postponed his decision for time to consult with the commercial sector.⁷⁴

Vandenberg announced his verdict on October 12, 1950. His memorandum expressed dissatisfaction that progress had reached “the

⁷⁰ Doolittle to Putt, letter, 11 August 1950, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

⁷¹ Doolittle to Putt, letter, 11 August 1950, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress. Indeed, in time, R&D efforts produced equipment such as night vision goggles (NVGs) and forward looking infrared (FLIR) systems that transformed the “handicap of darkness” into the preferred environment for American air power. For example, the opening strikes of Operations Desert Storm and Iraqi Freedom both occurred under the cover of darkness. John Andreas Olsen, *A history of air warfare* (Washington, DC: Potomac Books, 2010), 177, 287.

⁷² Schlatter to Doolittle, letter, 6 September 1950 and Schlatter to Doolittle, cable, 23 September 1950, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

⁷³ Schlatter to Doolittle, letter, 28 September 1950, James H. Doolittle Papers, Box 28, Folder 169, Library of Congress.

⁷⁴ Ethel M. De Haven, *History of Separation of Research and Development Command from the Air Material Command*, Vol 1, 1954, AFHRC call no. K201-82, 105.

point that additional action must be taken toward the objective of placing the Research and Development Command in operation.”⁷⁵ The chief of staff, however, refused to rule on how engineering functions would be divided between the organizations. Instead, he again charged the two commanding generals to settle the issue themselves.⁷⁶ To encourage cooperation, Vandenberg established a deadline, May 15, 1951, by which time “the Air Research and Development Command will be capable of performing its mission as an independent, self-sufficient major Air Force Command.” Moreover, the chief of staff directed the bureaucratic equivalent of sequestering two squabbling siblings together in a room. He ordered the relocation of ARDC headquarters “at once” to Wright-Patterson Air Force Base.⁷⁷

Vandenberg’s attempt at harmony, however, lacked an adjudicator with credibility and authority to implement structural change in the Air Force bureaucracy. The void left by Fairchild’s untimely death remained. He needed the influence of Jimmy Doolittle.

The Emergence of a Godfather

Vandenberg’s decision to collocate the ARDC and AMC staffs highlighted a glaring issue – the new command required a permanent location for its headquarters. The chief of staff considered the decision of “great importance.”⁷⁸ Indeed, the location would establish a vital interface with industry and influence “the effectiveness of research and development in the Air Force in the years to come.”⁷⁹ Moreover, the

⁷⁵ Vandenberg to The Vice Chief of Staff, Memorandum “Organization for Research and Development in the USAF,” 12 Oct 1950, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command.

⁷⁶ Ethel M. De Haven, *History of Separation of Research and Development Command from the Air Material Command*, Vol 1, 1954, AFHRC call no. K201-82, 104.

⁷⁷ Vandenberg to The Vice Chief of Staff, memorandum “Organization for Research and Development in the USAF,” 12 Oct 1950, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command.

⁷⁸ Vandenberg to Doolittle, letter, 5 January 1950, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

⁷⁹ Vandenberg to Doolittle, letter, 5 January 1950, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

economic benefit for the surrounding areas subjected the decision to a considerable amount of political interest.⁸⁰ Again, Vandenberg looked outside the Air Force for counsel. In January 1951, Vandenberg commissioned a special board to select a location for ARDC's new headquarters. Doolittle's impeccable reputation made him an ideal choice to lead the committee.

As Chairman of the Special Air Research and Development Command Site Selection Board, Doolittle presided over a seven-member board consisting of six civilians and two Air Force colonels. Joining Doolittle from outside the military were Ridenour, Overhage, Kelly, and Dr. Albert E. Lombard, who headed General Putt's research division.⁸¹ The board convened for a week in the Pentagon to study the problem and interview witnesses.⁸² The committee ultimately chose Baltimore because of its close proximity to Washington, DC. The resulting report stated the location promoted "effective cooperation and coordination with the Air Staff, the Army, the Navy, the RDB [Research Development Board], the NACA [National Advisory Committee on Aeronautics], the AEC [Atomic Energy Commission], the CAA [Civil Aeronautics Commission], and the many technical governmental agencies which are located near Washington."⁸³ Moreover, a location was available "*now*," which permitted "the ARDC to acquire competent personnel and initiate operations promptly."⁸⁴ Vandenberg accepted the board's recommendation and Baltimore became home to the command's

⁸⁰ Swift to Doolittle, 19 February 1951, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

⁸¹ Ridenour wrote Doolittle a note stating "Jimmy, they have it straight this time – as to who should be chairman of the committee," Ridenour to Doolittle, letter, 9 January 1951, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

⁸² Doolittle to Twining, letter, 27 March 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3.1 ARDC Site Selection Materiel.

⁸³ Doolittle to Twining, letter, 27 March 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3.1 ARDC Site Selection Materiel.

⁸⁴ Emphasis in original. Doolittle to Twining, letter, 27 March 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3.1 ARDC Site Selection Materiel.

headquarters in the summer of 1951.⁸⁵ Time validated Doolittle's rationale. ARDC remained in Baltimore until, in 1958, it relocated to nearby Andrews Air Force base (a location even closer to Washington, DC) where it remained until Air Force Systems Command dissolved in 1992.

Meanwhile, Vandenberg's deadline failed to promote consensus among his subordinates. Instead, collocating the two command staff's further polarized the debate.⁸⁶ In the intervening months, AMC insisted on maintaining control of production engineering for aircraft beyond the prototype phase. Therefore, AMC began planning for an organic production engineering division. The section would provide the command an engineering function after the transfer of its R&D division to ARDC. On February 2, 1951, the new Vice Chief of Staff Nathan Twining issued guidance supporting the AMC initiative. Intended to help ARDC to commence "active operations without further delay," the memorandum defined development as including "the construction and testing of experimental models or devices, but [excluded] operation and service tests." Twining's guidance, therefore, ruled AMC's purview included "all engineering and testing applicable to a production item and other modification of equipment in service use."⁸⁷ Doolittle approved of the memo at the time, believing it was a "temporary expedient designed to assure the protection of the Air Force-in-being until the ARDC was ready to assume responsibility for the function."⁸⁸ His opinion, however, soon changed.

⁸⁵ *The First Five Years of the Air Research and Development Command*, 26.

⁸⁶ *The First Five Years of the Air Research and Development Command*, 23.

⁸⁷ Vice Chief of Staff to Commanding General, AMC and Commanding General, ARDC, Memorandum "Organization for Research and Development in the Air Force," 2 February 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3.1 ARDC Site Selection Materiel.

⁸⁸ Doolittle to Vandenberg, Memorandum "Report on the Present Status of Air Force Research and Development," 20 April 1951, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress, 10.

Twining's direction did little to ameliorate the conflict. ARDC considered AMC's production engineering division a simple rebranding of its R&D directorate—a costly and unnecessary use of limited engineering talent. Instead, Saville preferred a more comprehensive definition of development, arguing:

Upon completion of the experimental model, the function of development does not end. The converse is true. As the model is production engineered, improvements and refinements still appear. Although production itself is not a function of development, these changes, improvements and refinements are.⁸⁹

Extending development through the production phase justified consolidation of engineering functions within ARDC. General Wolfe summarily objected to Saville's proposal. Citing Twining's February 2 guidance, the DCS/M argued "that any attempt to deviate from or improve upon the definitions agreed upon is not appropriate and will tend to confuse the people in the field."⁹⁰ On reviewing Wolfe's response, Saville commented sarcastically, "Gen Wolfe continues to display an open mind on this subject."⁹¹ The intractable situation required the chief of staff's intervention.

Exasperated by lack of progress, Vandenberg petitioned Doolittle's help in unraveling the institutional "Gordian knot."⁹² On February 15, Vandenberg announced that Doolittle would visit AMC facilities to ensure "no balls were dropped" in the transfer of R&D responsibilities.⁹³ The chief of staff commissioned Doolittle to "promptly establish an Air

⁸⁹ Saville, staff summary sheet "Proposed Air Force Letter Covering Developmental Definitions," n.d., NARA RG341 S190 R66 C021 S03 Box 7 F321.1 Organization and Policy R&D.

⁹⁰ Wolfe to Twining, memorandum, 26 February 1951, NARA RG341 S190 R66 C021 S03 Box 7 F321.1 Organization and Policy R&D.

⁹¹ Saville to Yates, memo routing slip, n.d., NARA RG341 S190 R66 C021 S03 Box 7 F321.1 Organization and Policy R&D.

⁹² Gorn, *Vulcan's Forge*, 20.

⁹³ Transcript of Proceedings of the Meeting with the AIA Held in Gen Vandenberg's Office on 7 June 1951, corrected copy, 15 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 20; Ethel M. De Haven, *History of Separation of Research and Development Command from the Air Materiel Command*, Vol 1, 1954, AFHRC call no. K201-82, 111.

Research and Development Command, and, at the same time, adequately protect the Air Materiel Command.”⁹⁴ Therefore, accompanied by Assistant Secretary of the Air Force for Research and Development William Burden, Doolittle left his Shell executive suite for a month-long visit of R&D facilities.⁹⁵

Doolittle presented the findings of his travels in a comprehensive memorandum titled “Report on the Present Status of Air Force Research and Development.” Doolittle’s inspection found the “opposition or at least the lack of active support” of various parties had impeded implementation of the Ridenour and Air University reports.⁹⁶ He judged the phased transition “to be far too slow to meet both the intent of [the chief of staff’s] directive and the minimum Air Force research and development requirements, and therefore to be wholly unsatisfactory.”⁹⁷ Doolittle, nonetheless, expressed sympathy with AMC’s position, stating:

The desire for self-sufficiency is normal and all aggressive commanders strive for freedom from dependence on other agencies. I did. Just as the Navy is the only wholly self-sufficient Service in the Department of Defense, so AMC was the only self-sufficient USAF Command, serving all and receiving help from none.⁹⁸

Regardless, with the specter of the rising Russian threat, Doolittle concluded, “the USAF research and development program is not now adequate to meet minimum National requirements.” The report stressed urgency warning, “Unless drastic remedial action is taken promptly,

⁹⁴ Transcript of Proceedings of the Meeting with the AIA Held in Gen Vandenberg’s Office on 7 June 1951, corrected copy, 15 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 8.

⁹⁵ Revised Trip Schedule, 13 February 1951, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

⁹⁶ Doolittle to Vandenberg, memorandum “Report on the Present Status of Air Force Research and Development,” 20 April 1951, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress, 1.

⁹⁷ Doolittle to Vandenberg, memorandum “Report on the Present Status of Air Force Research and Development,” 20 April 1951, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress, 4.

⁹⁸ Doolittle to Vandenberg, memorandum “Report on the Present Status of Air Force Research and Development,” 20 April 1951, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress, 13.

[R&D] will not be adequate for many years to come.”⁹⁹ Doolittle summarized the core obstacle succinctly, “Everyone is for research and development, just as everyone is against sin. However, very few people will sacrifice for it...The decision must be made – and it is a difficult one – to sacrifice some – or some more – quantity in the interest of improved quality.”¹⁰⁰

Doolittle continued with proposed solutions for the R&D deficiencies. First, the shortage of trained engineers constituted “the most serious single problem in the Air Force.”¹⁰¹ Therefore, the scarcity of technical talent demanded consolidating engineering functions under ARDC. Echoing Saville’s position, Doolittle suggested the responsibilities of development did not cease at the beginning of aircraft production. Instead, development continued through the entire lifecycle or from the “cradle to the grave.”¹⁰² In fact, Doolittle asserted “by far the greater part of development takes place after an airplane is in actual service.”¹⁰³ Additionally, Doolittle noted industry and the other services embraced continuous development. His further justification of structural change is worth quoting at length:

The qualitative functions of research and development are best accomplished in an environment which differs substantially from that appropriate to the quantitative or logistic functions of procurement, maintenance, and supply. Research, which is devoted to long-term goals, requires a constancy of purpose which can be secured only by protecting research from the urgency of immediate

⁹⁹ Doolittle to Vandenberg, memorandum “Report on the Present Status of Air Force Research and Development,” 20 April 1951, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress, 2.

¹⁰⁰ Doolittle to Vandenberg, memorandum “Report on the Present Status of Air Force Research and Development,” 20 April 1951, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress, 4.

¹⁰¹ Doolittle to Vandenberg, memorandum “Report on the Present Status of Air Force Research and Development,” 20 April 1951, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress, 5.

¹⁰² Doolittle to Vandenberg, memorandum “Report on the Present Status of Air Force Research and Development,” 20 April 1951, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress, 10; Comments on the Transcript of the Air Force—A.I.A. Meeting, n.d., NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command.

¹⁰³ Doolittle to Vandenberg, memorandum “Report on the Present Status of Air Force Research and Development,” 20 April 1951, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress, 10.

engineering problems arising in connection with the development function. At the same time, research must not be isolated from development; contact between them must ensure that the results of research are promptly embodied in new developments, and that the research program is soundly conceived in the light of development needs. The environment for development must be the one which is based on the continuity of the development function, from the conception of an idea to the abandonment of the process or product resulting from that idea...[ARDC] is striving to provide research and development with the vitally necessary continuity extending from research to operations.¹⁰⁴

In other words, Doolittle supported the ARDC position. He expressed his opposition to AMC's plan plainly, "Further study has convinced me not only of the inadvisability but of the practical impossibility of promptly establishing this new AMC Directorate of Production and Service Engineering."¹⁰⁵

Doolittle's report also highlighted a recent study by Colonel Bernard "Bennie" Schriever to the chief of staff. The recent National War College graduate's report titled "Development and Procurement of Combat Ready Aircraft" investigated the causes of poor air readiness in the Korean War.¹⁰⁶ Schriever's study presented a compelling argument for expanding systems engineering in the Air Force.¹⁰⁷ Doolittle lauded the report stating, "This study is very much in line with my own thinking and I concur, in principle, with its recommendations."¹⁰⁸ Similar to the Ridenour committee's suggestions, Doolittle advocated for a "systems

¹⁰⁴ Doolittle to Vandenberg, memorandum "Report on the Present Status of Air Force Research and Development," 20 April 1951, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress, 16 see also *The First Five Years of the Air Research and Development Command*, 25-26.

¹⁰⁵ Doolittle to Vandenberg, memorandum "Report on the Present Status of Air Force Research and Development," 20 April 1951, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress, 10.

¹⁰⁶ Stephen B. Johnson, *The United States Air Force and the Culture of Innovation, 1945-1965* (Washington, DC: Air Force History and Museums Program, 2002) 50.

¹⁰⁷ Final briefing, "Development and Procurement of Combat Ready Aircraft", n.d., NARA RG341 S190 R66 C021 S03 Box 4 F160.1 Procurement & Contracting, 3-4 and Johnson, *The United States Air Force and the Culture of Innovation*, 50.

¹⁰⁸ Doolittle to Vandenberg, memorandum "Report on the Present Status of Air Force Research and Development," 20 April 1951, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress, 12-13.

concept” acquisitions philosophy with centralized control to “permit the development responsibility and authority to remain in one agency throughout the life span of the aircraft.”¹⁰⁹

Like many of Doolittle’s reports, the memo generated “an impressive array of work” for the Air Staff.¹¹⁰ Vandenberg responded with a clear, sweeping decision on ARDC and AMC command responsibilities. Acting before Doolittle formally submitted his report, Vandenberg directed the immediate transfer of “all facilities, installations, buildings and personnel” within the AMC R&D directorate to ARDC. The verdict consolidated Air Force engineering functions under the new command. Accordingly, the memo appointed ARDC responsible for “engineering, laboratory, and testing services as are required by the Air Materiel Command in support of the AMC programs for materiel in production and in service.”¹¹¹

Doolittle’s assessment had a profound impact on the Air Force. The ARDC official history stated that the structural recommendations contained in the report “became the dominant note of the new Command and outlined the philosophy which guided the Command in its organization.”¹¹² The report also highlighted Schriever’s potential. With Doolittle’s support, Schriever developed systems engineering as his career progressed. Moreover, the assessment solidified the chief of staff’s confidence in Doolittle as a bureaucratic adjudicator with necessary authority, credibility, and time to oversee the structural change. Therefore, perhaps suspecting his decision would not bring an end to bureaucratic bickering, Vandenberg issued a directive stating:

¹⁰⁹ Doolittle to Vandenberg, memorandum “Report on the Present Status of Air Force Research and Development,” 20 April 1951, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress, 13.

¹¹⁰ Walkowicz to Ridenour, Griggs and Lt Col Dempsey, memorandum “Work for the Slaves,” 4 September 1951, NARA RG341 S190 R66 C021 S03 Box 3 F00.1 Miscellaneous R&D Information.

¹¹¹ Vandenberg to Commanding General AMC and Commanding General ARDC, memorandum “Organization for Research and Development in the USAF,” 28 March 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command.

¹¹² *The First Five Years of the Air Research and Development Command*, 25.

Lieut. General James H. Doolittle is acting as my special assistant to advise me in matters of mutual concern to the Air Materiel and Development Command pertaining to the establishment, organization, and operation of the Air Research and Development Command.

Problems in connection with this Air Force reorganization of mutual concern to the AMC and the ARDC which cannot be resolved by mutual agreement between the two Commands will be forwarded with a clear statement of each of the conflicting views to me for decision through General Doolittle who will study the problem and make recommendations to me. Similar action will be taken on problems arising in the Air Staff which cannot be resolved by mutual agreement between the Deputy Chief of Staff, Materiel and the DCS, Development.

General Doolittle will base his recommendations on the best interest of the Air Force as a whole, with due consideration to the Continuing [sic] capability of both the Air Materiel Command and the Air Force Research and Development Command to perform their assigned functions and responsibilities.¹¹³

Vandenberg had finally arrived at a solution for Fairchild's untimely passing.

Doolittle's responsibilities as Vandenberg's special assistant compelled the Shell executive to devote less time to his employer. Nonetheless, the company's president, Alex Frasier, maintained support for his subordinate's passion for government service. Accordingly, Doolittle continued to decline offers of per diem compensation commenting, "As usual Shell will pay for my transportation and expenses. They are pleased to do this as it is corporation policy to contribute the part time services of their executives to important government work."¹¹⁴ Although, by 1951, Doolittle regularly donated

¹¹³ Vandenberg to DCS/C, DCS/P, DCS/D, DCS/O, and DCS/M, memorandum "Appointment of Lieut. General Doolittle as Special Assistant to the Chief of Staff, 28 March 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command.

¹¹⁴ Doolittle to Twining, letter, 3 January 1951, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

four days a week in service to the Air Force.¹¹⁵ Implementing change in the Air Force was a full time job.

As Vandenberg's special assistant, Doolittle promoted systems engineering within AMC and ARDC.¹¹⁶ In 1951, Doolittle believed the concepts had not been introduced to "key people" within the two commands. A study by the Air Staff agreed, citing prevalent confusion regarding the "weapons systems approach" within the new R&D structure.¹¹⁷ Therefore, in a meeting he convened between AMC and ARDC agencies, Doolittle sequestered 90 minutes for Schriever to present his Combat Ready Aircraft briefing.¹¹⁸ Likewise, Doolittle arranged for Schriever to brief executives of the aviation industry during a meeting in the chief of staff's office.¹¹⁹ Accordingly, the systems methodology permeated the R&D bureaucracy and became an enduring facet of ARDC culture.¹²⁰

In addition to ideas, Doolittle fostered the careers of talented officers within the R&D community. For instance, he "brought in" Brigadier General James McCormack to the DCS/D directorate.¹²¹ McCormack graduated from West Point, became a Rhodes Scholar, and also possessed an engineering degree from MIT. His education and experience as Director of Military Applications of the United States

¹¹⁵ Doolittle to Rawlings, letter, 3 December 1951, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress; Doolittle to Gantz, letter, 17 July 1951, NARA RG341 S190 R66 C021 S03 Box 7 F312.3 Personal Correspondence - Gen Doolittle.

¹¹⁶ Doolittle to Partridge, letter, 15 November 1951, NARA RG341 S190 R66 C021 S03 Box 7 F321.1 Organization and Policy R&D.

¹¹⁷ J. P. Thornton, "History of the Deputy Chief of Staff, Development (July 1951-June 1952)," AFHRC call no. K140.1 V1, 8-9.

¹¹⁸ Doolittle to Commanding General, ARDC and Commanding General, AMC, memorandum "Briefings on Various Aspects of the AMC-ARDC Relationship," 15 November 1951, NARA RG341 S190 R66 C021 S03 Box 7 F321.1 Organization and Policy R&D.

¹¹⁹ Transcript of Proceedings of the Meeting with the AIA Held in Gen Vandenberg's Office on 7 June 1951, corrected copy, 15 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 23.

¹²⁰ Johnson, *The United States Air Force and the Culture of Innovation*, 52.

¹²¹ Griggs to Doolittle, memo routing slip, n.d., NARA RG341 S190 R66 C021 S03 Box 7 F321.1 Organization and Policy R&D.

Atomic Energy Commission brought strong credentials to the small cadre of R&D general officers.¹²² In the fall of 1952, however, McCormack's name was noticeably absent from the major general promotion list.¹²³ The Air Force instead selected eight younger officers in operational commands for promotion.¹²⁴ Likewise, the promotion board overlooked Schriever for advancement to brigadier general.¹²⁵ Again, officers in traditional flying commands maintained a distinct advantage: Two brigadier generals and a major general in Strategic Air Command (SAC) possessed commissioning dates junior to Schriever. Doolittle met with Vandenberg and the new ARDC Commanding General Partridge regarding what he considered oversights.¹²⁶ Likewise, Doolittle undertook efforts to advance Putt's career. In a letter to Vandenberg, Doolittle praised, "Major General Donald L. Putt has been outstanding as a tireless and productive worker and has made major contributions towards increasing the qualitative combat effectiveness of Air Force Materiel."¹²⁷ Accordingly, the special assistant recommended that the chief personally award Putt a Distinguished Service Medal.¹²⁸ Doolittle did not neglect the careers of the lower ranking officers and also

¹²² Johnson, *The United States Air Force and the Culture of Innovation*, 65 and Thomas P. Hughes, *Rescuing Prometheus: Four Monumental Projects That Changed the Modern World*, (New York: Pantheon, 1998), 63.

¹²³ Office of Public Information Press Release, "Fifteen AF Officers Promoted to General," 18 October 1952, NARA RG341 S190 R66 C021 S03 Box 12 F200.1 Personnel.

¹²⁴ Walkowicz to Doolittle, Memorandum "DCS/D and ARDC General Officer Promotions," 7 October 1952, NARA RG341 S190 R66 C021 S03 Box 12 F200.1 Personnel.

¹²⁵ Walkowicz to Doolittle, Memorandum "DCS/D and ARDC General Officer Promotions," 7 October 1952, NARA RG341 S190 R66 C021 S03 Box 12 F200.1 Personnel.

¹²⁶ Walkowicz to Doolittle, Memorandum "DCS/D and ARDC General Officer Promotions," 7 October 1952 and Walkowicz to Doolittle, memo routing slip, 7 October 1952, NARA RG341 S190 R66 C021 S03 Box 12 F200.1 Personnel;

¹²⁷ Doolittle to Vandenberg, letter, 7 January 1953, NARA RG341 S190 R66 C021 S03 Box 12 F200.1 Personnel.

¹²⁸ At the time, the Distinguished Service Medal was the third ranking decoration in the Air Force, subordinated only to the Congressional Medal of Honor and the Air Force Cross. Doolittle to Vandenberg, letter, 7 January 1953, NARA RG341 S190 R66 C021 S03 Box 12 F200.1 Personnel.

recommended the promotion of two members of the SAB Secretariat to lieutenant colonel and major.¹²⁹

Doolittle achieved considerable success with his career endorsements. In June 1953, less than seven months after Doolittle's intervention, the Air Force made Schriever a brigadier general.¹³⁰ The promotion marked a significant milestone for the future four-star general. Assistant Secretary of the U.S. Air Force for Research and Development Trevor Gardner later remarked that "we created Bennie Schriever in 1953."¹³¹ Certainly others can also claim credit in advancing Schriever's career, but Doolittle's influence is reflected in a picture of him pinning the rank of brigadier general onto the shoulders of a smiling and grateful Schriever.¹³² Likewise, the Air Force promoted McCormack to major general, and the two-star general eventually became the ARDC vice commander. The Air Force also advanced Putt to Lieutenant General in 1953. Putt acknowledged Doolittle's support remarking, "I am not unmindful nor unappreciative of the fact that it was only through the efforts of you, Pat [Partridge], and a few others which made my present position and rank possible."¹³³ Doolittle expressed satisfaction with Putt's promotion writing, "I am doubly delighted at seeing you receive this recognition because it is, first, an indication of appreciation of a job well done by an outstanding individual

¹²⁹ Doolittle to the Assistant Vice Chief of Staff, Memorandum "Promotion of Officers," 18 November 1952, NARA RG341 S190 R66 C021 S03 Box 12 F200.1 Personnel.

¹³⁰ Official biography of General Bernard Adolph Schriever, U.S Air Force, n.d. Retrieved from <http://www.af.mil/AboutUs/Biographies/Display/tabid/225/Article/104877/general-bernard-adolph-schriever.aspx>

¹³¹ Quoted in Don Schanche, "General of Outer Space," *Saturday Evening Post*. 234, no. 40 (October 7, 1961): 82. Retrieved from Academic Search Premier, EBSCOhost.

¹³² The photo henceforth assumed a prominent position in Schriever's office. Sheehan, *A Fiery Peace in a Cold War*, 128.

¹³³ Putt to Doolittle, letter, 1 August 1953, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

and, second, the realization of a hope that many of us have had for a long time—that promotion is possible for the R&D type.”¹³⁴

Doolittle’s legacy is also evident in the names of generals that commanded ARDC in the 1950s. For Schlatter’s successor, Doolittle convinced his close friend, Partridge, to accept command of ARDC in 1951.¹³⁵ Putt, another beneficiary of Doolittle tutelage, followed Partridge and assumed command in 1953. Likewise, Schriever led the organization and its successor, Air Force Systems Command, from April 1959 to August of 1966.¹³⁶ Indeed, of ARDC’s first seven commanders, five maintained close relationships with Doolittle.

In 1951, the newly appointed special assistant to the chief of staff relied on these relationships to implement the new R&D structure. Doolittle wrote Partridge in November expressing concern that the interaction between ARDC and the DCS/D remained unclear and problematic.¹³⁷ He was not alone. The Air Staff instructed McCormack to study the relationship and “make a set of recommendations...designed to draw the best line between the area of responsibility of DCS/D and that of ARDC.”¹³⁸ Agreeing to a request for “frank comments,” Doolittle helped McCormack draft the memo.¹³⁹ McCormack concluded the DCS/D had inappropriately managed many program details. His report, therefore, recommended the “withdrawal on the part of the Air Staff from

¹³⁴ Doolittle to Putt, letter, 30 July 1953, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

¹³⁵ Gorn, *Vulcan’s Forge*, 18.

¹³⁶ Gorn, *Vulcan’s Forge*, A-2-A-8.

¹³⁷ Doolittle to Partridge, letter, 15 November 1951, NARA RG341 S190 R66 C021 S03 Box 7 F321.1 Organization and Policy R&D.

¹³⁸ Yates to McCormack, memorandum, 24 August 1951, NARA RG341 S190 R66 C021 S03 Box 7 F321.1 Organization and Policy R&D, 20. See also J. P. Thornton, “History of the Deputy Chief of Staff, Development (July 1951-June 1952),” AFHRC call no. K140.1 V1, 8.

¹³⁹ McCormack, memorandum, 23 October 1951, NARA RG341 S190 R66 C021 S03 Box 7 F321.1 Organization and Policy R&D.

the operations of R&D management which are the responsibility, and must be the prerogative, of ARDC.”¹⁴⁰

Doolittle convened a meeting on December 18, 1951 at ARDC’s Wright Patterson Air Force Base headquarters, to discuss the results of McCormack’s study. Major General Putt, the newly appointed DCS/D, and ARDC Commander, General Partridge, represented the two organizations.¹⁴¹ Under the watchful eye of their respected elder, the principals agreed on a new division of duties. ARDC assumed responsibility for day-to-day technical execution while “broad guidance” would “be exercised by Headquarters USAF (DCS/D).”¹⁴² Doolittle’s intercession crafted an agreement that, according to DCS/D official history, provided a “sound basis” for “managing Air Force development.”¹⁴³

Nevertheless, Doolittle did not resolve all the reorganization problems with commensurate ease. When he assumed duties as Vandenberg’s special assistant, the rules governing the transition of program authority from ARDC and AMC remained unclear. Doolittle, therefore, endorsed a “team captain” solution to mitigate the dilemma. Under the construct, ARDC and AMC provided joint project officers to collaboratively manage an acquisition program within a Weapons System Project Office (WSPO). The maturity of the acquisition determined which project officer served as lead or team.

Because ambiguity on the issue remained, Doolittle interceded to clarify the roles of AMC and ARDC project officers. As 1951 drew to a close, Doolittle requested a meeting of “joint briefings” from AMC and

¹⁴⁰ McCormack to Putt, memorandum “Report on Air Force R&D Organization, with Particular Reference to DCS/D – ARDC Relationships,” 26 November 1951, NARA RG341 S190 R66 C021 S03 Box 7 F321.1 Organization and Policy R&D, 20.

¹⁴¹ Johnson, *The United States Air Force and the Culture of Innovation*, 45.

¹⁴² Partridge to Putt, letter, 19 December 1951, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

¹⁴³ J. P. Thornton, “History of the Deputy Chief of Staff, Development (July 1951-June 1952),” AFHRC call no. K140.1 V1, 11 and Johnson, *The United States Air Force and the Culture of Innovation*, 46.

ARDC representatives to ensure “full...understanding of the objectives of the reorganization.”¹⁴⁴ During the meeting, Doolittle addressed the issue directly, “When does the chairmanship change of a project board or in the project office?”¹⁴⁵ The special assistant to the chief of staff ruled the ARDC project officer is responsible “until the accelerated flight test program is over and the decision is made to mass-produce and to produce items not for tests but for the operational units.”¹⁴⁶ Nonetheless, perhaps naively, Doolittle submitted that the transfer “is not a point of major importance.” Instead, he emphasized teamwork between the two commands stating, “The point of major importance is to get the job done regardless of who is sitting in the chairman’s seat.”¹⁴⁷

Publication of Air Force Regulation 20-10 in the fall of 1951 codified Doolittle’s ambiguous position. In what historian Stephen B. Johnson described “a marvel of diplomacy,” the regulation formally introduced the team captain concept to balance tensions between ARDC and AMC.¹⁴⁸ The directive specified that an ARDC representative would serve as a project lead early in development and transfer authority to an AMC project officer when the program entered production. Again, the regulation relied on mutual agreement to determine the precise timing of the transition. If project officers could not reach consensus, the regulation directed the Air Staff to adjudicate the disagreement.¹⁴⁹

In practice, Doolittle’s relationship-based solution was not sustainable within the complex Air Force bureaucracy. In the WSPOs, ARDC’s focus on increasing aircraft performance inevitably conflicted

¹⁴⁴ Doolittle to Commanding General, ARDC and Commanding General, AMC, Memorandum “Briefings on Various Aspects of the AMC-ARDC Relationship,” 15 November 1951, NARA RG341 S190 R66 C021 S03 Box 7 F321.1 Organization and Policy R&D.

¹⁴⁵ “General Doolittle’s Summary,” 15 January 1952, AFHRC call no. 168.7265-235, 4.

¹⁴⁶ “General Doolittle’s Summary,” 15 January 1952, AFHRC call no. 168.7265-235, 4.

¹⁴⁷ “General Doolittle’s Summary,” 15 January 1952, AFHRC call no. 168.7265-235, 4.

¹⁴⁸ Johnson, *The United States Air Force and the Culture of Innovation*, 52-53 and Gorn, *Vulcan’s Forge*, 28.

¹⁴⁹ Johnson, *The United States Air Force and the Culture of Innovation*, 53.

with an AMC concern of price, quantity, and sustainability.¹⁵⁰

Consequently, the numerous disagreements imparted a significant toll on the Air Staff and delayed acquisition timelines. Thus, by the summer of 1953, Director of Requirements Brigadier General George E. Price informed Doolittle that the arrangement created a dysfunctional and “inherently explosive” environment.¹⁵¹

A powerful incentive to remedy the resident inefficiencies accompanied the installment of President Dwight D. Eisenhower’s fiscally conservative administration. As the Korean War and the commensurate boost to defense spending drew to a close, the new Secretary of the Air Force Harold E. Talbott questioned the organizational arrangement of the ARDC and DCS/D.¹⁵² Although the new Under Secretary of the Air Force Trevor Gardner supported the R&D framework, he also believed the “ARDC mess” required bureaucratic reform.¹⁵³

Once again, Doolittle conducted an assessment of the relationship between procurement and development. In his final analysis, the special assistant to the chief of staff declined to rule on the matter. Instead, Doolittle recommended a “comprehensive study” by the Air Staff to review the process.¹⁵⁴ His only stipulation was that the results protect R&D’s prominence within the bureaucracy.¹⁵⁵ Doolittle’s reluctance is perhaps due to an understanding of the political implications of a controversial

¹⁵⁰ Gorn, *Vulcan’s Forge*, 26.

¹⁵¹ Price to Doolittle, memorandum “AMC/ARDC,” 29 July 1953, NARA RG341 S190 R66 C021 S03 Box 7 F321.1 Organization and Policy R&D, 2.

¹⁵² Talbott likely entered the position with an unfavorable bias of ARDC. He previously served as Chairman of the Board for North American Aviation, a company that opposed the structural organization. William R. Conklin, “Eisenhower Names 4 High Executives,” *New York Times*, 20 December 1952. Retrieved from ProQuest.

¹⁵³ Schenk to Doolittle, Eyes Only memorandum “Conversation with Mr. Gardner,” 15 May 1953, and Gardner to Douglas, 29 May 1953, memorandum “ARDC-AMC Relationship,” NARA RG341 S190 R66 C021 S03 Box 17 F321.1 Organization and Policy R&D.

¹⁵⁴ Doolittle, Notes of phone call, 29 July 1953, NARA RG341 S190 R66 C021 S03 Box 17 F321.1 Organization and Policy R&D.

¹⁵⁵ Gorn, *Vulcan’s Forge*, 27.

ruling.¹⁵⁶ Similarly, by 1953, Doolittle likely discerned wisdom in Vandenberg's insistence on consensus; a verdict unacceptable to one of the opposing parties would not endure the bureaucratic test of time.

Although Doolittle did not rule on the matter, he provided guidance to principals on both sides of the ARDC-AMC debate. In October 1953, Talbott altered the structure of the Air Staff by directing "the responsibility and authority for administration of Research and Development matters in Headquarters USAF be assigned to the DCS/M."¹⁵⁷ Consequently, Deputy Chief of Staff for Materiel Lieutenant General Orville R. Cook became responsible for coordinating a solution with Lieutenant General Laurence Craigie, who had returned to the Pentagon as the DCS/D.¹⁵⁸ Doolittle advised Craigie in drafting a memorandum delineating the "team captain" responsibilities between ARDC and AMC. Doolittle approved of Craigie's proposal, which suggested the transfer of authority occurred when the Air Staff issued written "determination of the final aircraft or equipment configuration that is to be produced in quantity for inventory purposes."¹⁵⁹ Likewise, he visited AMC headquarters and assisted the new commander, General Edwin Rawlings, in revising Air Force Regulation 20-10.¹⁶⁰ Cooperation between the two agencies resulted in formal adoption of the "Cook-Craigie Procedures," which institutionalized Craigie's proposal. With

¹⁵⁶ Schenk to Doolittle, Eyes Only memorandum "Conversation with Mr. Gardner," 15 May 1953, and Gardner to Douglas, 29 May 1953, memorandum "ARDC-AMC Relationship," NARA RG341 S190 R66 C021 S03 Box 17 F321.1 Organization and Policy R&D.

¹⁵⁷ Talbott to Chief of Staff U.S. Air Force, memorandum "Realignment of Research and Development Functions and Organization in the USAF," 1 October 1953, NARA RG341 S190 R66 C021 S03 Box 17 F321.1 Organization and Policy R&D.

¹⁵⁸ Gorn, *Vulcan's Forge*, 27.

¹⁵⁹ Vandenberg to Commanding Generals ARDC, AMC, APGC, draft memorandum, n.d., James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

¹⁶⁰ Rawlings to Doolittle, letter, 8 April 1953, NARA RG341 S190 R66 C021 S03 Box 17 F321.1 Organization and Policy R&D.

consensus achieved, the decision promised harmony between the two commands.¹⁶¹

In 1953, Doolittle also established the bureaucratic structure that fostered the Air Force's ICBM program. In February, Doolittle sent a letter to Vandenberg recommending the SAB stand up Nuclear Weapons Panel (NWP). Written shortly after the successful detonation of America's first hydrogen bomb, the letter argued "the very substantial advances in nuclear weapons development in the recent past, and particularly the amazing development which has taken place in the thermonuclear-nuclear field in the last six months" justified a new standing committee.¹⁶² Vandenberg agreed and appointed Dr. John von Neumann to chair the NWP. Prompted by Schriever, Doolittle convinced Vandenberg to commission a study on the future of thermonuclear development.¹⁶³ The resultant report, dated October 21, 1953, predicted a one to two megaton nuclear weapon will "weigh 3,000 lbs., and probably even somewhat less."¹⁶⁴ Von Neumann underscored the implications of this "conservative estimate," stating, "It should be noted that the long-range ballistic missile (ATLAS) is at this moment conceived with a payload of 3000 lbs., and with a [circular error of probability] of 1,500 feet at the target."¹⁶⁵ Dr. Theodore von Karman claimed the study "sold the top men of the military services and Congress on the possibility of a nuclear ICBM."¹⁶⁶ Similarly, Schriever later remarked, "I don't think

¹⁶¹ Johnson suggests agreement was also encouraged by the intrusion of Strategic Air Command (SAC) into the debate. In 1953, SAC recommended a "phasing group" of senior officers to validate engineering changes. AMC and ARDC joined forces in protest, citing the proposal infringed on project officer responsibilities. Johnson, *The United States Air Force and the Culture of Innovation*, 54.

¹⁶² Quoted in John Lonquest, "The Face of Atlas: General Bernard Schriever the and Development of the Atlas Intercontinental Ballistic Missile 1953-1960," Ph.D. dissertation, Duke University, 1996, 78. See also Johnson *The United States Air Force and the Culture of Innovation*, 61-62.

¹⁶³ Lonquest, "The Face of Atlas," 79.

¹⁶⁴ John von Neumann, "Professor John von Neumann's Report on Nuclear Weapons," 21 October 1953, AFHRC Call Number K168.1512-3, 7.

¹⁶⁵ John von Neumann, "Professor John von Neumann's Report on Nuclear Weapons," 21 October 1953, AFHRC Call Number K168.1512-3, 7.

¹⁶⁶ Theodore von Karman, and Lee Edson, *The Wind and Beyond: Theodore von Karman, pioneer in aviation and pathfinder in space* (Boston: Little Brown, 1967), 301.

the [ICBM] program could have really been accomplished without the von Neumann Committee being part of the total structure.”¹⁶⁷

The new ARDC framework provided another key enabler for Schriever’s ICBM program. Within the command, Schriever built upon a culture of systems engineering to advance his ballistic missile program. In ARDC Vice Commander Major General McCormack, he found a superior sympathetic to his innovative views on program management. Hence, McCormack granted Schriever authorities to develop Western Development Division (WDD).¹⁶⁸ Schriever later recollected that he achieved success because “[I] controlled the people and I controlled the money, and I also had cooperative people from AMC.”¹⁶⁹ It is difficult to overstate Schriever’s strategic impact. In his book, *A Fiery Peace in a Cold War*, Neil Sheehan argued, “Bernard Schriever was to be the indispensable man in the creation of the intercontinental ballistic missile during the Cold War and the enormous consequences that were to flow from it—America’s penetration of space and an unspoken but permanent truce of mutual deterrence with the Soviet Union.”¹⁷⁰

Accordingly, Schriever’s career launched into the upper echelons of military rank, and he assumed command of ARDC in 1959. Schriever subsequently spread the systems-management approach throughout the Air Force acquisition process. In 1961, he convinced the Air Force to transfer procurement responsibilities to ARDC, thus creating Air Force Systems Command (AFSC). Schriever presided over the new command as a four-star general until 1966.¹⁷¹ Indeed, in the midst of the Cold

¹⁶⁷ Bernard A. Schriever, Richard H. Kohn, and Jacob Neufeld, *Reflections on research and development in the United States Air Force: an interview with General Bernard A. Schriever, and Generals Samuel C. Phillips, Robert T. Marsh, and James H. Doolittle, and Dr. Ivan A. Getting* (Washington, DC: Center for Air Force History, 1993), 56.

¹⁶⁸ Schriever, Kohn, and Neufeld, *Reflections on research and development in the United States Air Force*, 53.

¹⁶⁹ Schriever, Kohn, and Neufeld, *Reflections on research and development in the United States Air Force*, 55.

¹⁷⁰ Sheehan, *A Fiery Peace in a Cold War*, 173.

¹⁷¹ Gorn, *Vulcan’s Forge*, 72-73.

War, Gardner paid Schriever the ultimate compliment stating, "I rank Schriever with the Lindberghs, the Doolittles and the other heroes of our time."¹⁷²

Industrial Resistance

Establishment of ARDC, however, also required overcoming resistance from outside the Air Force. Indeed, opposition from industry began to coalesce in the spring of 1951. Like AMC, the defense industry retained a production-oriented philosophy following World War II. According to Stephen B. Johnson, although never stated publicly, corporate executives feared a stronger technical understanding within the Air Force might undermine corporate profits.¹⁷³ In Doolittle's opinion, the Air Force's emphasis on quality over quantity implied reduced production numbers and less revenue for industry.¹⁷⁴ Indeed, Thomas L. McNaugher noted "profits came from long production runs; R&D was no more profitable, relatively, than it had been before the war."¹⁷⁵ Moreover, executives expressed concern that increased funding of internal Air Force research would siphon the few remaining R&D resources away from industry.¹⁷⁶ The aircraft industry also expressed concern over the requirement to coordinate with multiple Air Force organizations.¹⁷⁷

As an industrialist, Doolittle sympathized with the concerns and engaged his associates within industry to assuage their reservations. For instance, while in Los Angeles on a February 1951 tour of AMC installations, Doolittle convened a meeting with Putt, Burden, and senior

¹⁷² Quoted in Schanche, "General of Outer Space."

¹⁷³ Johnson, *The United States Air Force and the Culture of Innovation*, 69.

¹⁷⁴ Pencil notes of Gen Doolittle, 29 July 1953, NARA RG341 S190 R66 C021 S03 Box 7 F321.1 Organization and Policy R&D, 2.

¹⁷⁵ Thomas L. McNaugher, *New Weapons Old Politics: America's Military Procurement Muddle* (Washington, DC: The Brookings Institution, 1989): 31.

¹⁷⁶ Synopsis of Meeting with Aircraft Industries Association, Held in General Vandenberg's office, 7 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 3.

¹⁷⁷ Aircraft Industries Association of America Inc. to Under Secretary of the Air Force, memorandum, 25 May 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command.

executives from North American Aviation, Douglas Aircraft Company, and Lockheed Aircraft Company.¹⁷⁸ The gathering reportedly went well and news of the meeting reached the Under Secretary of the Air Force. The Shell vice president also understood corporations operate within the confines of an organizational structure.¹⁷⁹ Therefore, in April, Doolittle arranged a meeting between Don Quarles of Bell Labs, Schlatter, and Putt to facilitate best practices of coordination amongst the communities.¹⁸⁰

Doolittle's efforts, however, did not prevent the Aircraft Industry Association (AIA) from voicing its concerns to the Department of Defense. In May 1951, the association unanimously passed a resolution of protest and demanded an audience with Air Force leaders. AIA President retired Admiral DeWitt C. Ramsey sent a copy of the declaration to Under Secretary of the Air Force John A. McCone, which stated:

The Aircraft Industries Association views with alarm the activation of the Research and Development Command in the form it understands is now contemplated. It is the earnest conviction of the group that the the action now planned would result in divided authority, confusion, misunderstanding and lowered efficiency in place of the relatively smooth operating arrangement in effect at present. It is considered of urgent importance that action looking to the transfer of certain activities of the Air Materiel Command to the Research and Development Command be postponed and that a conference between high level representatives of

¹⁷⁸ Attending the meeting was J. K. Kindelberger from North American Aviation, Inc. Mr. Donald Douglas Sr. from Douglas Aircraft Company, Inc., and Mr. Robert E. Gross of Lockheed Aircraft Corporation. Doolittle to Gross, Doolittle to Douglas, and Doolittle to Kindelberger, letters dated 13 February 1951, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

¹⁷⁹ Doolittle referenced similarities of corporate structure to the military bureaucracy in Doolittle to Schlatter, letter, 12 April 1951, NARA RG341 S190 R66 C021 S03 Box 7 F312.3 Personal Correspondence – General Doolittle and James Doolittle, "Presentation to Industrial College of the Armed Forces, Petroleum: World Reserves, Production, Manufacture, and Use," 1 March 1949, NDU Call number U412.5.L25 49-93, 2.

¹⁸⁰ Quarles later became Assistant Secretary of Defense, Research and Development and Secretary of the Air Force. Doolittle to Schlatter, letter, 12 April 1951, NARA RG341 S190 R66 C021 S03 Box 7 F312.3 Personal Correspondence – General Doolittle.

the Air Force and members of our industry be held to consider the effects of such transfer.¹⁸¹

The AIA resolution surprised Air Force leaders. Upon receiving news of the AIA objections, McCone dispatched a letter to Secretary of the Air Force Thomas K. Finletter, Vandenberg, and Twining commenting, "it was my understanding that a number of aircraft people originally objected to the proposed Air Force action but that after the plan had been explained to them by General Doolittle and Mr. Burden they indicated their complete agreement with the proposal."¹⁸² Instead, the under secretary had learned that "No one in attendance at the AIA directors meeting favored the plan and many expressed great alarm." Expressing a need for urgency, McCone closed his letter, "I think we should discuss this matter" tomorrow.¹⁸³

Doolittle responded by immediately sending Vandenberg a letter refuting "some of the unwarranted criticisms that have been leveled against the ARDC."¹⁸⁴ The two-page explanation, addressed to "Van," articulated the structural advantages of ARDC. Doolittle argued, "Experience gained in Korea, a confused world situation, and general uncertainty as to when and where war may start point up the need for, from now on, giving increased emphasis to *quality*."¹⁸⁵ Doolittle encouraged Vandenberg to honor the AIA's request for a meeting, concluding, "If the aircraft industry knew the above, I am sure they

¹⁸¹ Aircraft Industries Association of America Inc. to Under Secretary of the Air Force, memorandum, 25 May 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command.

¹⁸² McCone to Secretary Finletter, The Chief of Staff and The Vice Chief of Staff, letter, 28 May 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command.

¹⁸³ McCone to Secretary Finletter, The Chief of Staff and The Vice Chief of Staff, letter, 28 May 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command.

¹⁸⁴ Doolittle to Vandenberg, letter, 29 May 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command.

¹⁸⁵ Emphasis in original. Doolittle to Vandenberg, letter, 29 May 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command.

would look with greater tolerance and perhaps approbation on the new set up.”¹⁸⁶

The chief of staff concurred and Doolittle arranged a meeting between Air Force leadership and representatives of the aircraft industry. Vice Chief of Staff Twining presided over the June 7 meeting, but deferred to Doolittle to moderate the assembly. Doolittle explained the Air Force’s rationale for establishing ARDC. The rising Soviet threat demanded an increased focus on quality of production. “We shouldn’t swap men with Russia,” Doolittle declared. Instead, “We should base any war on swapping technology. If we went into an all-out quantity race with Russia, we wouldn’t have the same advantage that we would if we went into a quality race.”¹⁸⁷ Doolittle argued the existing organization did not provide sufficient support for R&D. He underscored his point, remarking, “I feel that it is a very serious indictment of our air policy that there has not been a single new prototype laid down since 1947.”¹⁸⁸ In contrast, structural independence of ARDC provided “adequate protection of those agencies that are working specifically on the future and on very abstract concepts.”¹⁸⁹

Doolittle also addressed industry concerns of reduced R&D funding. He clarified the service’s position, stating “it is Air Force policy for all possible research and development to be done by industry, by research organizations, and by universities.”¹⁹⁰ Invoking his credentials

¹⁸⁶ Doolittle to Vandenberg, letter, 29 May 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command.

¹⁸⁷ Transcript of Proceedings of the Air Force – A.I.A. Meeting held in General Vandenberg’s Office, 7 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 3.

¹⁸⁸ Transcript of Proceedings of the Air Force – A.I.A. Meeting held in General Vandenberg’s Office, 7 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 13.

¹⁸⁹ Transcript of Proceedings of the Air Force – A.I.A. Meeting held in General Vandenberg’s Office, 7 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 6.

¹⁹⁰ Transcript of Proceedings of the Meeting with the AIA Held in Gen Vandenberg’s Office on 7 June 1951, corrected copy, 15 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 12.

he stated, “As a businessman myself, I feel very strongly that government should not do anything that industry can do and will.”¹⁹¹ The primary focus of Air Force engineering, he assured, was to establish requirements and evaluate system performance. Doolittle assured, “There is no intention in the establishment of the Research and Development Command of diverting research or development funds from industry.” Instead, he declared ARDC’s purpose “is to acquire additional funds in order to get more research and development work done by industry.” Again, he assured his business associates that the reorganization did not usurp private research efforts or require the construction of new laboratory facilities.¹⁹²

Next, Doolittle assuaged industry’s concern of coordinating government contracts through multiple agencies. He assured, “The question of complication of contact between industry and the Air Force has been very thoroughly considered.”¹⁹³ Privately, however, Doolittle expressed that he was “not sympathetic to their complaints that they are confused by this.”¹⁹⁴ The Shell executive believed engagement with multiple Air Force agencies constituted sound business practice. Thus, he predicted, regardless of the internal structure, aircraft companies would engage with multiple agencies “in order to get as many people as possible on their team.”¹⁹⁵ Regardless, before the AIA executives, Doolittle guaranteed that under the new construct industry “will never

¹⁹¹ Transcript of Proceedings of the Meeting with the AIA Held in Gen Vandenberg’s Office on 7 June 1951, corrected copy, 15 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 14.

¹⁹² Transcript of Proceedings of the Meeting with the AIA Held in Gen Vandenberg’s Office on 7 June 1951, corrected copy, 15 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 13.

¹⁹³ Transcript of Proceedings of the Meeting with the AIA Held in Gen Vandenberg’s Office on 7 June 1951, corrected copy, 15 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 14.

¹⁹⁴ “General Doolittle’s Summary,” 15 January 1952, AFHRC call no. 168.7265-235, 4.

¹⁹⁵ “General Doolittle’s Summary,” 15 January 1952, AFHRC call no. 168.7265-235, 4.

have to contact more than one agency at a time.”¹⁹⁶ The determinant would be when a decision is made to start production of the aircraft. “When a decision is made to produce,” Doolittle explained, “all official correspondence will be through the Air Materiel Command.” Otherwise, prior to production, “all official correspondence will be through the Air Research and Development Command.”¹⁹⁷

Despite Doolittle’s argument, the AIA executives expressed their reservations. The Chairman of the Board of Governors of the AIA contended that in industry, “production and development engineering are inseparable” and therefore, opposed the structural separation within the Air Force.¹⁹⁸ Similarly, John L. Atwood of North American Aviation voiced concern with the status quo’s deficiencies, but did not “believe [the problem] is a matter of organization.”¹⁹⁹ Another executive expressed apprehension stating, “There is nothing the matter with this business that some new prototypes won’t cure and that doesn’t take...a whole new organization.”²⁰⁰ Lockheed’s representative, Robert Gross, believed the formation of two commands would “create for [industry]

¹⁹⁶ Transcript of Proceedings of the Meeting with the AIA Held in Gen Vandenberg’s Office on 7 June 1951, corrected copy, 15 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 14.

¹⁹⁷ Transcript of Proceedings of the Meeting with the AIA Held in Gen Vandenberg’s Office on 7 June 1951, corrected copy, 15 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 15.

¹⁹⁸ Interestingly, Schriever, who was present at the meeting to brief his Combat Ready Aircraft presentation, ultimately implemented the argument. As the ARDC Commanding General in 1961, Schriever convinced the Air Force to transfer the procurement function from AMC to ARDC. The reorganization created Air Force Systems Command and Air Force Logistics Command. Both commands endured until they were merged in 1992 to form the present day Air Force Materiel Command. Transcript of Proceedings of the Meeting with the AIA Held in Gen Vandenberg’s Office on 7 June 1951, corrected copy, 15 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 25.

¹⁹⁹ Transcript of Proceedings of the Meeting with the AIA Held in Gen Vandenberg’s Office on 7 June 1951, corrected copy, 15 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 29.

²⁰⁰ Transcript of Proceedings of the Meeting with the AIA Held in Gen Vandenberg’s Office on 7 June 1951, corrected copy, 15 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 37.

another barrier that will be difficult for us to overcome.”²⁰¹ Finally, an executive argued “you are not going to get [better] performance, in my opinion, by administrative change in the customer’s house.”²⁰²

Despite their trepidation, the executives agreed to assist the Air Force during the reorganization. Atwood assured “industry intends to cooperate no matter what kind of organization [the Air Force] might create.”²⁰³ In a similar vein, Northrop Aircraft Chief Executive Officer Oliver Echols identified a weakness with the bifurcated arrangement observing, “Fundamentally, I am just a little bit afraid you expect a lot of human nature to expect all of these people in these commands to get along.”²⁰⁴ Accordingly, he recommended a single point of contact, or “project officer,” to preside over a program throughout its development and procurement.²⁰⁵ Doolittle applauded Echols’s “excellent point” and highlighted to Twining the “necessity for superior project officers.”²⁰⁶ Likewise, in a subsequent analysis of the meeting, the Air Force concluded that a majority of the AIA concerns would be “largely, if not entirely, solved by the adequate working of a sound project-officer system.”²⁰⁷

²⁰¹ Transcript of Proceedings of the Meeting with the AIA Held in Gen Vandenberg’s Office on 7 June 1951, corrected copy, 15 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 38.

²⁰² Transcript of Proceedings of the Meeting with the AIA Held in Gen Vandenberg’s Office on 7 June 1951, corrected copy, 15 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 39.

²⁰³ Transcript of Proceedings of the Meeting with the AIA Held in Gen Vandenberg’s Office on 7 June 1951, corrected copy, 15 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 27.

²⁰⁴ Transcript of Proceedings of the Meeting with the AIA Held in Gen Vandenberg’s Office on 7 June 1951, corrected copy, 15 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 34.

²⁰⁵ Transcript of Proceedings of the Meeting with the AIA Held in Gen Vandenberg’s Office on 7 June 1951, corrected copy, 15 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 34.

²⁰⁶ Transcript of Proceedings of the Meeting with the AIA Held in Gen Vandenberg’s Office on 7 June 1951, corrected copy, 15 June 1951, NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command, 47.

²⁰⁷ “Comments on the Transcript of the Air Force-A.I.A. Meeting,” n.d., NARA RG341 S190 R66 C021 S03 Box 3 F004.3 Air Research and Development Command.

Following the meeting, Doolittle continued to engage with reluctant business executives. Companies such as North American and Pratt and Whitney continued to resist the framework.²⁰⁸ Accordingly, Doolittle agreed to North American Aviation President J. H. Kindelberger's invitation to meet and "open mindedly discuss to conclusion the problems that are causing...concern." Again, he expressed empathy remarking, "Agree that industry's capacity to produce good equipment must be protected, and if possible, enhanced."²⁰⁹ Although resolute in his conviction for structural change, Doolittle demonstrated fairness in his assessments. Writing Putt, he objectively declared, "Frankly, I am pleased but not entirely satisfied with the manner in which the reorganization has progressed."²¹⁰ Likewise, by early 1952, Doolittle acknowledged that the split in functions combined with a lack of experienced project officers reduced Air Force responsiveness to technical requests from industry.²¹¹

Doolittle's reputation for fairness instilled confidence among industry executives. For example, Echols noted that "You have taken hold of this problem, and you have to solve it. You are the only person I know who can."²¹² Echols even suggested Doolittle return to active duty confiding, "You are the only person I know who has the personal contacts within the Air Force and the prestige without to run the show. Put on your uniform – make them give you Four Stars. Have the two commands report to you and run the show."²¹³ He closed stating, "I think that it is

²⁰⁸ Doolittle to Putt, letter, 9 January 1952, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

²⁰⁹ Doolittle to Kindelberger, letter, 14 June 1951, NARA RG341 S190 R66 C021 S03 Box 7 F312.3 Personal Correspondence – General Doolittle.

²¹⁰ Doolittle to Putt, letter, 9 January 1952, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

²¹¹ "General Doolittle's Summary," 15 January 1952, AFHRC call no. 168.7265-235, 2.

²¹² Echols to Doolittle, letter, 11 June 1951, NARA RG341 S190 R66 C021 S03 Box 7 F312.3 Personal Correspondence – General Doolittle, 2.

²¹³ Echols to Doolittle, letter, 11 June 1951, NARA RG341 S190 R66 C021 S03 Box 7 F312.3 Personal Correspondence – General Doolittle, 4.

up to you. I have always contended that you were indestructible, and that is what it takes – you have the ball!”²¹⁴ Doolittle responded by crediting Vandenberg’s determination to remedy the bureaucratic troubles and expressed that he intended “to stay with the project until this is achieved.”²¹⁵ Doolittle continued stating:

That is why [Vandenberg] called me in. I have agreed to stay as long as I can be helpful and he wants my services. Will work either in civilian clothes or in uniform. At present, during the formative stage of the reorganization, I feel that I can be more helpful in mufti. If and when my usefulness can be substantially enhanced by going into uniform I will, at Van’s request, do so.²¹⁶

Doolittle’s fourth star would have to wait until Congress promoted him in 1985.²¹⁷

Additionally, Doolittle encouraged leaders within the R&D community to adopt a similar philosophy of unbiased engagement. For instance, he wrote Putt stating, “There are strong and sincere individuals and agencies who were bitterly opposed to the reorganization. There were and are equally strong and sincere forces in favor of it. In an objective unbiased analysis of what has happened and what remedial action is indicated, there should be representatives from all agencies involved.”²¹⁸ Doolittle also fostered relationships with regular visits to civilian and government R&D facilities. For example, in 1952, he arranged a tour of seven research sites in as many days including Idaho

²¹⁴ Echols to Doolittle, letter, 11 June 1951, NARA RG341 S190 R66 C021 S03 Box 7 F312.3 Personal Correspondence – General Doolittle, 6.

²¹⁵ Doolittle to Echols, letter, 14 June 1951, NARA RG341 S190 R66 C021 S03 Box 7 F312.3 Personal Correspondence – General Doolittle.

²¹⁶ Doolittle to Echols, letter, 14 June 1951, NARA RG341 S190 R66 C021 S03 Box 7 F312.3 Personal Correspondence – General Doolittle.

²¹⁷ On 4 April 1985, the Congress approved Doolittle’s promotion to the rank of full general. President Ronald Reagan and Senator Barry Goldwater pinned on the four-star rank. Doolittle remains the only reserve officer to ever hold the rank of full general. Official biography of General James H. Doolittle, U.S. Air Force, n.d. Retrieved from <http://www.af.mil/AboutUs/Biographies/Display/tabid/225/Article/107225/general-james-harold-doolittle.aspx>.

²¹⁸ Doolittle to Putt, letter, 9 January 1952, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

Falls, St. Louis, and San Francisco.²¹⁹ Doolittle also secured transportation by Shell aircraft to ferry an ARDC team to the newly established atomic research facility in Livermore, California.²²⁰ The new ARDC Assistant Vice Commander, Brigadier General McCormack expressed his gratitude commenting, “It was indeed a fine round robin—in large part because you were aboard.”²²¹

The policies of subsequent ARDC commanders reflect Doolittle’s legacy of engagement with industry. For instance, Partridge’s December 1952 conference reflects his commitment to fostering a strong relationship between the Air Force, industry and academia. The new three-star general placed significant importance on the conference, admitting the results would determine the “competence or stupidity of the Air Research and Development Command.”²²² Indeed, the impressive participation from across the R&D enterprise enhanced ARDC’s legitimacy and prestige. Doolittle also deemed the “excellent” conference “did a great deal to answer questions in the mind of industry and to develop better teamwork between the Air Research and Development Command and industry.”²²³ Partridge’s successor, General Putt continued the tradition of engagement. Putt solicited Doolittle’s advice on how best to garner feedback from the aircraft industry to identify “existing deficiencies of ARDC with specific cases that need correction or solution.”²²⁴ Doolittle applauded Putt’s initiative and recommended he contact several additional companies.²²⁵

²¹⁹ Logbook Entries, August 1952, Doolittle Papers, Series XVI, Logbook 15, McDermott Library.

²²⁰ Doolittle to Wilson, letter, 27 August 1952, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

²²¹ McCormack to Doolittle, letter, 19 August 1952, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

²²² Partridge to Doolittle, 12 December 1952, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

²²³ Doolittle to Partridge, letter, 23 December 1952, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

²²⁴ Putt to Echols, letter, 8 August 1953, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

²²⁵ Doolittle to Putt, 11 August 1953, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

Doolittle's proactive engagement with industry demonstrated an understanding of how to implement change within a complex organization. Author Richard N. Haass contends that dialog with opponents is a necessary element of imparting change. Therefore, Haass advises the bureaucratic entrepreneur to expend a majority of his time "with those who are either neutral or even somewhat opposed to you."²²⁶ Similarly, in his treatise on negotiation, Thomas R. Colosi advocates sustained engagement with an opposing party.²²⁷ In an environment of competing interests, Colosi submits, "The relationship between the parties is the most critical variable in determining the...ultimate outcome."²²⁸

Indeed, Doolittle's persistent engagement resulted in less opposition from the aviation industry. By January of 1952, additional corporations endorsed the new R&D structure. For instance, Convair conceded ARDC "is developing even faster that we thought it would—though it be granted there have been growing pains in the process."²²⁹ Later in the year, the company acknowledged ARDC support for the B-36 program, "most certainly makes the new system look good."²³⁰ Likewise Douglas and Consolidated Aircraft both expressed approval of the new structure.²³¹ Doolittle's advocacy enabled the nascent command to prevail against the bureaucratic headwinds and assume a functional status. Indeed, in the April of 1953, *Air Force Magazine* published an

²²⁶ Richard N. Haass, *The Bureaucratic Entrepreneur: How to be Effective in any Unruly Organization* (Washington, DC: Brookings Institution Press, 1999), 150.

²²⁷ Thomas R. Colosi, *On and Off the Record: Colosi on Negotiation* (New York: American Arbitration Association, 2001), 69.

²²⁸ Colosi, *On and Off the Record*, 69.

²²⁹ Lanphier to Doolittle, letter, 7 January 1952, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

²³⁰ Lanphier to Doolittle, letter, 8 July 1952, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

²³¹ Doolittle to Putt, letter, 9 January 1952, James H. Doolittle Papers, Box 29, Folder 173, Library of Congress.

article appropriately declaring “Air Research and Development Command has come of age.”²³²

Historical accounts validate Doolittle’s belief that innovation necessitated the separation of ARDC from AMC. In 1965, Doolittle himself thought at the time, “in order that we might go ahead full speed with research and development, it was necessary that it be separated from procurement.”²³³ Likewise, Dr. Michael Gorn contends in the AMC construct, “the day-to-day pressures of assembly line schedules took precedence over long-range planning and experimentation.”²³⁴ Neil Sheehan agrees, arguing, “The experience had given the AMC a focus on logistics and on quantity over quality that had carried over into the postwar period. Innovation required separation.”²³⁵ Similarly, under the ARDC structure, Johnson assesses “the military, academia, and private industry developed organizational procedures to accommodate rapid technological change.”²³⁶ Thomas McNaugher also notes “besides giving the Air Force alternatives, the situation encouraged innovation.”²³⁷

Indeed, in the 1950s, ARDC-issued R&D contracts became big business for aviation companies. The Air Force’s demand for technologically advanced materiel spurred a growth in the defense market that outstripped commercial aviation. The industry accordingly adjusted to increased requirements for the advanced aircraft, electronics, missiles, and space systems; traditional, production-minded aircraft companies evolved into R&D-focused aerospace firms. McNaugher observes, by the end of the decade, “traditional aircraft—now largely aerospace—firms depended on military sales for 67 percent (Beech

²³² “Riding Herd on USAF Research,” *Air Force Magazine*, 36 no. 4 (April 1953): 29.

²³³ General James H Doolittle, Interview by Arthur Marmor, 23 June 1965, AFHRC call no. K239.0512-623 C.1, 28.

²³⁴ Gorn, *Vulcan’s Forge*, 9.

²³⁵ Sheehan, *A Fiery Peace in a Cold War*, 126 and 173.

²³⁶ Johnson, *The United States Air Force and the Culture of Innovation*, 3.

²³⁷ McNaugher, *New Weapons Old Politics*, 32.

Aircraft) to 99.2 percent of their business (Martin).”²³⁸ Likewise, in the early 1960s, R&D contracts constituted 71 percent of North American Aviation’s sales.²³⁹ The increased influence of this business compelled President Dwight D. Eisenhower to label the framework as the “military-industrial complex.”²⁴⁰

The military-industrial complex developed innovative machines of war that provided indispensable tools for statecraft. The Air Force’s ICBM fleet provided a crucial element of nuclear deterrence. Indeed, the advancements underscored Eisenhower’s New Look strategy by balancing the Soviet Union’s numerical superiority with nuclear force. The organization, however, did more than just produce doomsday weapons. The 1970s witnessed the emergence of the successful F-15, A-10, and F-16 tactical weapons systems armed with precision munitions.²⁴¹ Moreover, AFSC program management ushered in the era of stealth with acquisition of the F-117 and B-2. The technical advancements again countered greater numbers of Soviet forces in Eastern Europe. Richard Purcell argues that these advancements “ultimately transformed the American way of war and ushered in an era of unprecedented military dominance.”²⁴²

Conclusion

Although Vandenberg’s January 3, 1950 decision to establish the Air Research and Development Command (ARDC) was necessary, it was not sufficient to affect change within the Air Force bureaucracy. Innovative reform required Doolittle’s stewardship to shepherd ARDC from vulnerable infancy into an operational command. In his book *The*

²³⁸ McNaugher, *New Weapons Old Politics*, 32.

²³⁹ McNaugher, *New Weapons Old Politics*, 32.

²⁴⁰ Eisenhower, Dwight D, “Farewell Address to the Nation” 17 January 1961, 3 see also Johnson, *The United States Air Force and the Culture of Innovation*, 3.

²⁴¹ Gorn, *Vulcan’s Forge*, 126-127.

²⁴² Purcell, Richard. 2014. "Hagel's 'Third Offset Strategy' Key to Maintaining U.S. Military Supremacy." *World Politics Review* (19446284) 1. *World Politics Review*. Retrieved from EBSCOhost.

Bureaucratic Entrepreneur: How to be Effective in any Unruly

Organization, Haass argues innovation within a bureaucracy requires constant engagement with multiple levels of the organization.²⁴³ Haass also submits that personal relationships are “central to building support for the adoption and implementation of... proposals.”²⁴⁴ Dr. Ivan Getting agreed, remarking, “There is another rule...in the Air Force: you’ve got to have somebody in the Pentagon to walk up and down the halls and protect your vested interest at all times. In this case...it was Jimmy Doolittle, who was held in the highest regard by both the Secretary and by the Chief.”²⁴⁵ ARDC’s culture, commanders, headquarters, relationship with industry, and guiding regulations pay tribute to Doolittle’s legacy. His active leadership begot a structure that promoted an innovative culture within the Air Force. Therefore, it is no surprise that Chief Scientist of the Air Force Alexander H. Flax declared Doolittle “was really the godfather of R&D in the Air Force.”²⁴⁶

In April 1953, *Air Force Magazine* published a review of Quinten Reynolds’s biography titled *The Amazing Mr. Doolittle*. The author concluded Doolittle’s present duties as an Air Force consultant “may, in the last analysis, overshadow in importance any of his remarkable achievements.”²⁴⁷ Indeed, considering Doolittle’s numerous historic achievements, his role as the chief of staff’s special assistant is perhaps the iconic Airman’s most enduring contribution to air power. Few others could so aptly navigate the spheres of military bureaucracy, industry, and academia to implement change in the Air Force. History rightfully

²⁴³ Haass, *The Bureaucratic Entrepreneur*, 178.

²⁴⁴ Haass, *The Bureaucratic Entrepreneur*, 178.

²⁴⁵ Schriever, Kohn, and Neufeld, *Reflections on research and development in the United States Air Force*, 40.

²⁴⁶ Dwayne A. Day, *Lightning Rod: A History of the Air Force Chief of Scientist’s Office* (Washington, DC: Chief Scientist’s Office, 2000): 103.

²⁴⁷ James H. Straubel, “The Amazing Mr. Doolittle: A Book Review,” *Air Force Magazine*, 36 no. 6 (June 1953): 39.

considers Bernard Schriever as the father of the ICBM. We would be wise to also remember its godfather...Jimmy Doolittle.



Conclusion: A Spectacularly Unique Individual

The Roman statesman Lucius Quinctius Cincinnatus is remembered for ascending to the position of dictator twice, only to resign his position and return to civilian life.¹ Although Jimmy Doolittle did not hold public office, his legendary career similarly navigated through multiple roles in government service and civil life. Accordingly, Doolittle's career is the subject of numerous books, articles, and films. As good as they are, these have failed to examine the implications of his unique career on his performance as a senior leader. Moreover, these treatments have overlooked a significant portion of his life – his leadership as a citizen-airman between 1944 and 1954. This study addressed these historical omissions with an assessment of Doolittle's performance as an operational air commander in World War II and as a reserve officer during the dawn of the Cold War.

A review of Doolittle's life up to his assumption of command of the Eighth Air Force provides several insights. Early in his career, his technical expertise, competitive spirit, and moral courage helped him cultivate a reputation as a talented and daring pilot. Transcontinental flights, airspeed records, academic degrees, and the first blind flight adorned his impressive résumé of aviation accomplishments leading up to World War II. Arnold recognized Doolittle's skills and assigned him the mission for which he was well qualified – the raid on Tokyo. Doolittle accomplished this mission through an impressive combination of tactical and technical innovation and strong personal leadership. His efforts achieved strategic effects that helped shape the landscape of World War II. The triumph immortalized Doolittle as one of history's most daring

¹ Halicarnassus of Dionysius, "458 BC: Rome: Public servant." *Lapham's Quarterly* 4, no. 2 (Spring 2011): 109. Retrieved from EBSCOhost.

warriors and launched him into the senior echelons of military rank, for which he was less well prepared.

In North Africa, Doolittle had to adapt rapidly to the challenges of high command. The success he had achieved at the squadron level initially eluded him as commander of a nascent numbered air force. His lack of staff experience and limited professional military education hindered his adjustment to the responsibilities of such a command. Nevertheless, the relatively small size of his force permitted Doolittle's strength of personal leadership to compensate for his shortcomings. He also demonstrated a capacity to learn from his subordinates and, more importantly, his own mistakes. Doolittle's steep learning curve eventually earned the confidence of his superiors who deemed him worthy of commanding the Mighty Eighth. In January 1944, Doolittle lacked the administrative skills and bureaucratic experience typical of senior officers. He had, however, exhibited a tradition of achieving operational effectiveness, instituting innovation, and employing strong personal leadership.

Doolittle's work to achieve operational effectiveness demonstrates the utility of his aggressive, yet mature, command demeanor. In the spring of 1944, he grasped a decisive opportunity to defeat the Luftwaffe and mustered the full weight of his forces to pressure the German air defenses. To enable his vision of maximum effort, Doolittle drove his men to the brink of exhaustion. The exertions, however, proved worth the cost. By June 6, 1944, the Eighth had swept German fighters from the skies of western Europe, contributing significantly to the success of Operation Overlord. Doolittle's response to fratricide of friendly ground forces during close air support operations, although less dramatic, reflects a sound understanding of the primacy of effectiveness over efficiency. The measures he implemented increased the risk to his aircrews and diminished their proficiency in strategic bombardment.

Nevertheless, the adaptations ultimately reduced risk to friendly ground personnel. They also notably contributed to the larger effort of defeating the German armed forces. In short, Doolittle was not afraid to place effectiveness above efficiency in order to extract the “highest profit” from his forces.

The Eighth Air Force commander’s efforts to innovate offer a different perspective of his command performance. Doolittle’s propensity for offensive action and noteworthy moral courage again emerged as beneficial qualities. He understood the decision to “let the fighters” loose would likely increase the short term losses and decrease the morale of the bomber force. Despite objections from subordinates, he remained firm in the decision and hastened the Luftwaffe’s destruction. Although Doolittle was not the only air commander with an offensive mindset, he served a decisive role in the change in tactics.

Doolittle’s ability to innovate technically, however, was less successful. Much to his chagrin, he could not replicate the degree of technical improvement he had achieved as a junior officer. The scale of a numbered air force was simply too large to adopt his technical visions. In fact, the Mighty Eighth benefited most from the technical efforts of Doctor, not Lieutenant General, Doolittle. His arguably most significant technical innovation — the development of 100-octane fuel — occurred when he was employed by Shell Oil. Doolittle’s approach to blending innovative technology and tactics was reflected in his efforts to improve the accuracy of radar-bombing. Although these endeavors did not achieve direct tactical success, they enabled the Eighth to maintain pressure on the German economy despite the poor European weather, contributing noticeably to both operational and strategic success. In sum, Doolittle’s technical knowledge, which was so crucial to his earlier achievements, proved to be of mixed value. The Eighth Air Force,

however, benefited significantly from its commander's aggressiveness and moral fortitude.

Doolittle's leadership of the Eighth Air Force offers another important measure of his command performance. He adopted a command style that flourished in a demanding environment for which he had not been formally prepared. His engaging approach strengthened his relationships with superiors and subordinates alike. Thus, he enjoyed sufficient latitude to implement his vision for the how Eighth Air Force should fight. His stewardship of his men's military spirit was also laudable. Although he implemented efforts to improve the well-being of his men, his actions reflected a broad view regarding their welfare. Doolittle grasped the subtle, yet important, difference between his command's mood and its military spirit. His aggressive, persuasive leadership never compromised the latter for the former. He instinctively sensed that defeating the Luftwaffe was the best way to maintain his Airmen's military spirit, and he was right.

Following his European command, Doolittle's transition back to life as a civilian was a noteworthy passage in the life of the air power advocate. His brief duration in the Pacific offered a valuable period of reflection. On the beaches of Okinawa, he articulated visionary beliefs that defined his platform for advocacy in the coming decade. Foremost in his personal views was the need for an independent air service and research and development's (R&D) prominent role in the future of air power. Upon returning from the war, these convictions first manifested themselves in fevered advocacy in support of air independence and military unification. In testimony before Congress, however, Doolittle's aggressive spirit proved less useful. Although his strident views garnered national attention, they further entrenched the opposition's obstinacy and protracted the passionate debate. The end of 1945 also marked Doolittle's decision to return to civilian life. Shell's offer of a significant

salary and generous leave policy resonated with Doolittle's rational career calculus. The position provided him a comfortable income and the opportunity to serve his country in positions of consequence. Indeed, his new civilian status and reputation as an aggressive air advocate made him an ideal fit to lead the Air Force Association (AFA).

Doolittle's role as an air advocate following the war provides further insight into his unusual position as a citizen-airman. Doolittle's connections with Shell and the armed forces enabled him to broker transactions that benefited both his employer and his Air Force. Although Doolittle devoted ample time to government service, Shell profited financially from the arrangement. Likewise, the Air Force benefited from Doolittle's connections within industry and access to his sage technical counsel. Doolittle did not believe the arrangement constituted a conflict of interest and later commented, "I see no conspiracy between the military and industry. I see only essential cooperation and coordination."² In retrospect, however, his concurrent service in government and industry placed Doolittle in an environment rife with moral hazard. Nonetheless, Doolittle eschewed exploiting his privileged positions for personal profit and navigated the delicate situation with irreproachable integrity. The arrangement also permitted Doolittle to play a prominent role in the military unification debate. Like his associate, Chief of Staff General Carl Spaatz, Doolittle believed he could best influence the outcome by increasing AFA membership. Indeed, in two short years, he grew the organization into a powerful voice of air advocacy. Although examination reveals Doolittle's efforts did little to sway the outcome of the defense reorganization, his ability to charter, organize, and mobilize the AFA reflects an admirable ability to lead at the strategic echelon.

² General Jimmy Doolittle, Interview by E. M. Emme and W. D. Putnam, 21 April 1969, AFHRC call no. K239.0512-625, 51-52.

Doolittle's leadership competence is also reflected in his support of the Air Research and Development Command (ARDC). The reserve officer's reputation as a scholar enabled him to assume a prominent position on the Ridenour Committee and introduce his vision of R&D into the Air Force bureaucracy. Indeed, the report's recommendations demonstrate Doolittle's political savvy and nuanced understanding of imparting structural change within a large organization. Moreover, General Hoyt Vandenberg's decision to override his Air Staff's recommendation reflects Doolittle's personal influence on the chief of staff. Serving an equally important role in the formation of the new command was Doolittle's ability to marshal support among key leaders in the Air Force, industry, and academia to facilitate structural change. The innovative seed planted in ARDC eventually blossomed into Air Force Systems Command and the acquisition system that begot the modern Air Force.

Jimmy Doolittle's enviable list of achievements has given him a rightful place among prominent aviation pioneers and military leaders alike. Historians have, accordingly, treated his leadership performance favorably. An assessment of his leadership between 1944 and 1954 confirms this widely held impression. As a numbered air force commander during World War II, the Mighty Eighth's domination of the Luftwaffe was the ultimate testament to Doolittle's operational effectiveness. His wartime accomplishments are also reflected in the effective use of his aircrews and the efforts to mitigate risk to friendly ground forces during close-air-support operations. Although Doolittle had mixed success innovating technically as an air force commander, his tactical improvements significantly enhanced the air offensive against Germany. Doolittle's apt management of the transitory shifts of his force's morale while maintaining steadfast in his determination to defeat the Luftwaffe is another testament to his leadership aptitude.

Although generally overlooked by historians, Doolittle's leadership performance following the war also merits admiration. By the close of 1954, Doolittle's leadership had helped realize two of his prominent air power beliefs – an independent Air Force and a strong R&D organization. Although the AFA likely had minimal influence on the military unification debate, Doolittle's presidency of the association reflects respectable skill in leading a large organization. More impressive, however, is Doolittle's ability to impart change on the Air Force bureaucracy. His advocacy in support of the ARDC demonstrates an ability to both influence and implement a pivotal policy decision. It is doubtful that another leader could have marshaled consent among the diverse communities of military, industry, and academia to institute a structural change within the Air Force. Indeed, his influence in establishing ARDC and its successor, Air Force Systems Command, is perhaps Jimmy Doolittle's most significant and overlooked contribution to air power.

The lessons of Doolittle's performance as citizen-airman are surprisingly relevant in the 21st century. Although modern air forces do not marshal air formations consisting of thousands of heavy bombers, today's numbered air force commanders encounter many of the same challenges that Doolittle faced in 1944. For instance, the debate over the best application of airpower with which to support friendly ground forces persists to this day. The role of tactical and technical innovation in airpower also remains a paramount concern of senior-level air commanders. The ability to persuade men, both superior and subordinate, to take appropriate action they otherwise might not take, is also a timeless leadership quality. Furthermore, success at the senior echelons of command still requires management of large bureaucratic organizations. The Department of Defense (DoD), for instance, is seeking a change to the current institutional structure to create an enduring

culture of innovation.³ Indeed, imparting change on bureaucratic processes is perhaps the most enduring means of accomplishing strategic innovation.

There are, however, limitations in emulating Doolittle's role as citizen-airman in the 1950s. For instance, as a Shell executive and AFA president, Doolittle engaged in implicit collaboration with the Air Force. Such interaction is simply not possible today. In reflecting on Doolittle's correspondence with Air Force leaders, Chief of Staff General Mark A. Welsh III commented, "There are a lot more laws now...and for good reason."⁴ Indeed, America's legal framework has evolved significantly in the last 50 years. Although Doolittle successfully navigated the moral pitfalls of concurrent responsibility, condoning similar dealings today would likely undermine public trust in the Department of Defense (DoD). It is also impractical to invoke Doolittle's career as a precise template for officer development. As General Welsh remarked, "Doolittle was a spectacularly unique individual."⁵ Indeed, Doolittle possessed intangible qualities that allowed him to succeed in the military, industry, and academia. It is unreasonable to expect any system of officer development to produce leaders in mass that replicate Doolittle's remarkable persona.

Despite these limitations, it is appropriate to contemplate the qualities that benefited Doolittle as a leader in and out of uniform. Of Doolittle's many qualities that provided him influence as a citizen-airman, credibility is perhaps the most prominent. Phillip Meilinger noted "in order to establish credibility as a leader" in the Air Force, an Airman "had to be a good pilot."⁶ Neil Sheehan appropriately

³ Ben FitzGerald and Loren DeJonge Schulman, "12 Months in – 8 Months Left: An Update on Secretary Carter's Innovation Agenda," *Center for New American Security (CNAS)*, 28 April 2016. Retrieved from <http://www.cnas.org/an-update-on-carters-innovation-agenda#.VyT-h2NqfbM>, 1.

⁴ General Mark A. Welsh III, interview by author, 11 April 2016.

⁵ General Mark A. Welsh III, interview by author, 11 April 2016.

⁶ Phillip S. Meilinger, *Hoyt S. Vandenberg: The Life of a General* (Indianapolis: Indiana University Press, 1989), 202.

commented, Doolittle “commanded respect high and low because he had done it all—champion racing plane pilot, the first aviator to take off and land blind on instruments alone, scholar, oil industry executive.”⁷ Indeed, his skill and reputation as a skilled aviator provided Doolittle reverent esteem among his fellow Airmen. This reputation helped him implement unpopular decisions in his wartime command. Likewise, Doolittle’s legendary standing helped him unify Airmen under the banner of the AFA and adjudicate bureaucratic conflict in the halls of the Pentagon. Similarly, Doolittle’s scholarly achievements provided him access to many of the prominent minds in academia. As he commented in his memoirs, “I think there are two great benefits of an advanced degree: one is the increased knowledge and greater capacity that you have, the other is the prestige it gives you with your associates, particularly those who also have advanced degrees.”⁸ Doolittle’s doctoral degree, however, was not simply a resumé embellishment. In lauding his impressive accomplishments, Chief Scientist of the Air Force Alexander H. Flax commented, Doolittle “was was also a pretty good engineer!”⁹ Moreover, his experience as a Shell executive provided him unique access to captains of industry and the necessary credibility to engage with them to alleviate resistance to change outside the Air Force.

Doolittle’s aggressive spirit and moral courage also helped him to succeed as a leader. Indeed, these attributes, which propelled him to fame as a junior officer, were also key to his success as a three-star general. Doolittle’s offensive mentality and moral fortitude underpinned his operational effectiveness, innovative successes, and effective leadership. Although aggressiveness proved less useful in his advocacy

⁷ Neil Sheehan, *A Fiery Peace in a Cold War: Bernard Schriever and the Ultimate Weapon* (New York: Random House, 2009), 127-128.

⁸ James H. Doolittle with Carroll V. Glines, *I Could Never Be So Lucky Again* (New York: Bantam Books, 1992), 176.

⁹ Quoted in Dwayne A. Day, *Lightning Rod: A History of the Air Force Chief of Scientist’s Office* (Washington, DC: Chief Scientist’s Office, 2000): 103.

before Congress, it helped him inspire thousands to join his crusade for air power. Moreover, these qualities were complemented by an essential dose of humility that enabled Doolittle to grow throughout his career. Although he often made mistakes, he acknowledged his errors, internalized the lessons, and emerged a better leader. This capacity to grow was perhaps Doolittle's most valuable attribute as a leader.

Doolittle's innate understanding of how to implement change in a large, diverse organization also contributed to his effectiveness as a leader. His knowledge of bureaucracies within the government and industry helped him recognize that effective pursuit of R&D required structural independence. He also understood lasting change required modifying officer career progression. Moreover, Doolittle realized that implementing Vandenberg's decision to reform the bureaucracy required continual interaction, mediation, and advocacy with diverse stakeholders in the Air Force and industry. Upon examination, Doolittle's triumph over the resistant Air Force bureaucracy is one of his most influential leadership accomplishments.

Likewise, Doolittle's effectiveness as a senior leader relied upon his ability to maintain close personal relationships with individuals in myriad communities. Doolittle's unique career introduced him to prominent members of the military, industry, and academia. His personal charisma and credibility allowed him to develop and maintain close relationships of mutual respect with many of these individuals. The relationships mattered. Indeed, much of Doolittle's success as a leader resided in his ability to influence associates such as Generals Spaatz, Vandenberg, Partridge, Schriever, and Putt, Theodore von Karman, Louis Ridenour, Oliver Echols, and Mervin Kelly. Doolittle's leadership served as a bridge between these men and helped shape the nascent Air Force into a technically superior service.

Analysis of Doolittle's performance as a citizen-airman offers several implications regarding the professional development of senior Air Force officers. First, a senior leader educated as a trained engineer can have a considerable influence on promoting technical innovation, especially when afforded sufficient time and latitude. Moreover, technical training provides the benefit of credibility and association with those in the academic community. In combat, this technical expertise offers fewer benefits to the numbered air force commander. Indeed, during times of war, qualities such as aggressiveness, moral courage, and humility are paramount. The study also suggests that familiarity with the nature of large organizations and a diverse personal network are essential attributes for an effective strategic leader. Accordingly, while it is appropriate for the Air Force to foster technical skills in the development of its junior officers, it should not overlook development of the more intangible leadership qualities that are required among successful leaders. Moreover, developing a diversity of thought and relationships with those outside the military service can benefit the strategic leader during a time of peace.

Although Doolittle's career did not follow a typical path, he performed admirably in leading both in war and peace. Perhaps the Air Force would benefit from the service of more senior leaders who have had a non-traditional career path. Likewise, the service might profit from more reserve officers ascending to prominent positions in the active-duty command structure. Admittedly, these officers would require credibility and qualifications commensurate with their active-duty counterparts. Nonetheless, a more inclusive policy that offers citizen-airman additional leadership opportunities might expand the diversity of thought and thereby enhance effectiveness in the upper echelons of command.

As a citizen-airman, Jimmy Doolittle's spectacular career left an indelible mark on the history of air power. Behind the man's daring and

dashing persona was a measure of humility that fostered his growth as a general officer. Although his technical expertise forged trails in aviation, his moral qualities more significantly contributed to his success as a leader in war. As Clausewitz observed, in war these moral qualities are the “the real weapon, the finely-honed blade.”¹⁰ Doolittle’s leadership tempered the blade of the Eighth Air Force and hastened the demise of the Luftwaffe. Equally impressive, however, is Doolittle’s campaign across the military, industry, and academia to implement structural change within the Air Force. Doolittle’s battle against bureaucratic inertia produced a legacy of innovation that represents his most remarkable and unacknowledged achievement. We would be wise to remember the enduring legacy of the Cincinnatus of the air.



¹⁰ Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret. (Princeton: Princeton University Press, 1989), 185.

Bibliography

Primary Sources

Academic Papers

- Doolittle, J. H. *NACA Report No. 203 Accelerations in Flight*. National Advisory Committee for Aeronautics, 1925
- , "Wing Loads as Determined by the Accelerometer." Masters Thesis, Massachusetts Institute of Technology, 1924.
- , "The Effect of the Wind Velocity Gradient on Airplane Performance." DoS Diss., Massachusetts Institute of Technology, 1925.

Articles

- Doolittle, James H. "A Letter from Jimmy Doolittle." *Air Force Magazine*, 29 no. 6 (July 1946): 10.
- , "Doolittle Scores: Wasted Defense Billions." *Air Force Magazine*, 31 no. 12 (December 1948): 13-15.
- , "Shall we Court Calamity?" *Air Force Magazine*, 30 no. 4 (April 1947): 11.
- "Doolittle Urges Unified Air Force." *Air Force Magazine*, 29 no. 9 (September 1946): 27.
- Klein, F. D. "Aircraft Performance with 100 Octane Fuel." *Journal of the Aeronautical Sciences* 2, no. 2 (March 1935): 43-47.
- "Life Begins at Forty." *Air Force Magazine*, 30 no. 9 (September 1947): 11-21.
- "Riding Herd on USAF Research." *Air Force Magazine*, 36 no. 4 (April 1953): 29
- "The Air Force Association." *Air Force Magazine*, 29 no. 2 (February 1946): 45-46.
- Straubel, James H. "The Amazing Mr. Doolittle: A Book Review." *Air Force Magazine*, 36 no. 6 (June 1953): 39.

Books

- Army Air Forces Statistical Digest: World War II*. Washington, DC: Office of Statistical Control, 1945.
- Arnold, General H. H. *Global Mission*. New York: Hutchinson & CO., 1951.
- Bradley, Omar N. *A Soldier's Story* (New York, Rand McNally and Company, 1951.
- Clausewitz, Carl von. *On War*. Edited and Translated by Michael Howard and Peter Paret. Princeton: Princeton University Press, 1989.
- Doolittle, James H. with Carol v. Glines, *I Could Never be so Lucky Again*. New York: Bantam Books, 1992.

- Douhet, Giulio. *The Command of the Air*. Tuscaloosa, AL: The University of Alabama Press, 2009.
- Forrestal, James. *The Forrestal Diaries*. Edited by Walter Millis, with the Collaboration of E.S. Duffield. New York: Viking, 1966.
- Foulois, Major General Benjamin D. with Colonel C. V. Glines, *From the Wright Brothers to the Astronauts: The Memoirs of Major General Benjamin D. Foulois*. New York: McGraw-Hill Book Company, 1968.
- Fuller, J.F.C. *The Foundations of the Science of War*. London: Hutchinson and Co., 1926.
- Galland, Adolf. *The First and the Last: The Rise and Fall of the German Fighter Forces, 1938-1945*. Translated by Mervyn Savill. New York: Henry Holt and Company, 1954.
- Getting, Ivan, A. *All in a Lifetime: Science in the Defense of Democracy*. New York: Vantage Press, 1989.
- Hansell, Haywood S. Jr. *The Air Plan That Defeated Hitler*. Atlanta, GA: Higgins-McArthur/Longino & Porter, Inc., 1972.
- Karman, Theodore von and Lee Edson. *The Wind and Beyond: Theodore von Karman, pioneer in aviation and pathfinder in space*. Boston: Little Brown, 1967.
- Karman, Theodore von. *Where We Stand: A Report of the AAF Scientific Advisory Group*. Wright Field, OH: Headquarters Air Materiel Command, 1946.
- *Toward New Horizons: Science, the Key to Air Supremacy*. Andrews Air Force Base, MD: Headquarters Air Force Systems Command, History Office, 1992.
- Marshall, George C., Henry Harley Arnold, and Ernest Joseph King. *The War Reports of General of the Army George C. Marshall, Chief of Staff, General of the Army H.H. Arnold, Commanding General, Army Air Forces Fleet Admiral Ernest J. King, Commander-in-Chief, United States Fleet and Chief of Naval Operations*. Philadelphia: Lippincott, 1947.
- Mitchell, William. *Winged Defense: The Development and Possibilities of Modern Air Power-Economic and Military*. Tuscaloosa, AL: The University of Alabama Press, 2009.
- Schlaifer, Robert and S. D. Herron, *Development of Aircraft Engines and Fuels: Two Studies of relations between government and business*. Andover, MA: Andover Press, 1950.
- Schriever, Bernard A., Richard H. Kohn, and Jacob Neufeld, *Reflections on research and development in the United States Air Force: an interview with General Bernard A. Schriever, and Generals Samuel C. Phillips, Robert T. Marsh, and James H. Doolittle, and Dr. Ivan A. Getting*. Washington, DC: Center for Air Force History, 1993.
- Straubel, James H. *Crusade for Airpower: The Story of the Air Force Association*. Washington, DC: Aerospace Education Foundation, 1982.
- Spires, David N. *Orbital Futures: Selected Documents in Air Force Space History*. Vol 1. Peterson AFB: CO, Air Force Space Command, 2004.

- The First Five Years of the Air Research and Development Command.* Baltimore: Air Research and Development Command, 1955.
- Truman, Harry S. *Memoirs Volume 2: Years of Trial and Hope.* Garden City, NY: Doubleday, 1956.
- Tzu, Sun. *The Illustrated Art of War*, translated by Samuel B. Griffith. New York: Oxford University Press, 2005.

Government Documents

- Army Air Force Field Manual 1-5. *Employment of Aviation of the Army.* Washington, DC: Government Printing Office, 1943.
- Army Air Force Field Manual 1-15. *Tactics and Technique of Air Fighting.* Washington, DC: Government Printing Office, 1942.
- Baker, Newton D. *Final Report of War Department Special Committee on Army Air Corps.* Washington, DC: Government Printing Office, 1934.
- Congressional Record. *Proceedings and Debates of the 79th Congress.* 1st sess., Appendix, vol. 91, part 13, 1945. Retrieved from archive.org.
- Congressional Record. *Proceedings and Debates of the 80th Congress.* 1st sess., vol. 93, Part 7-8, 1947. Retrieved from archive.org.
- Doolittle, James. Presentation to Industrial College of the Armed Forces, *Petroleum: World Reserves, Production, Manufacture, and Use.* 1 March 1949.
- Joint Publication 1-02. *Department of Defense Dictionary of Military and Associated Terms.* 8 November 2010 (as amended through 15 February 2016).
- Official Military Personal File of James H. Doolittle. National Archives and Records Administration, St. Louis, MO.
- US House. *Hearings Before the Subcommittee of the Committee on Appropriations on Military Establishment Appropriations Bill for 1948.* 80th Cong., 1st Sess., 1947.
- US Senate. *Hearings Before the Committee on Military Affairs on S. 84 and S. 1482.* 79th Cong., 1st sess., 1945.
- US Senate. *Unification of the Armed Forces Hearings Before the Committee on Naval Affairs on S. 2044.* 79th Cong., 2nd sess., 1946.

Manuscript Collections

- Air Ministry and Ministry of Defense: Registered Files, National Archives, United Kingdom.
- James H. Doolittle, Library of Congress
- James H. Doolittle, Special Collections Department, McDermott Library, The University of Texas at Dallas.
- Henry Harley Arnold Papers, Library of Congress
- Ministry of Defense and predecessors: Royal Aircraft Factory, later Royal Aircraft Establishment, later Royal Aerospace Establishment: Reports, National Archives, United Kingdom.

Carl A. Spaatz Papers, Library of Congress
Office of Air Force Chief of Staff, Special assistant to Chief of Staff, National
Archives, College Park, Maryland.

Air Force Oral History Collection

Interview of Gen. Earle E. Partridge, K239.0512-729.
Interviews of Gen. James H. Doolittle, K239.0512-623, 793, 998, 1206, 1405,
2142, 2369, 2417.
Interview of Lt. Gen. William E. Kepner, K239.0512-1444.
Interview of Maj. Gen. Donald Putt, K239.0512-724.

Unit and Staff Office Histories

History. Deputy Chief of Staff, Development, 1 July 1949 – 30 June 1950.
History. Deputy Chief of Staff, Development, 1 July 1950 – 31 December 1950.
History. Deputy Chief of Staff, Development, 1 January 1951 – 30 June 1951.
History. Deputy Chief of Staff, Development, July 1951 – June 1952.
History. Directorate of Research and Development, Office, Deputy Chief of
Staff, Development, Fiscal Year 1950.
History. Directorate of Research and Development, Office, Deputy Chief of
Staff, Development, 1 July 1950 – 31 December 1950.
History. Directorate of Research and Development, Office, Deputy Chief of
Staff, Development, 1 January – 30 June 1951.
History. Directorate of Research and Development, Office, Deputy Chief of
Staff, Development, 1 July 1951 – 31 December 1951.
History. Directorate of Research and Development, Office, Deputy Chief of
Staff, Development, 1 January – 30 June 1952.
History. Headquarters Eighth Air Force, 1944 - 1945.
History. Headquarters Eighth Air Force, 1-31 January 1944.
History. Headquarters Eighth Air Force, 1-29 February 1944.
History. Headquarters Eighth Air Force, 1-31 March 1944.
History. Headquarters Eighth Air Force, 1-30 April 1944.
History. Headquarters Eighth Air Force, 1-31 May 1944.
History. Headquarters Eighth Air Force, 1-30 June 1944.
History. Headquarters Eighth Air Force, 1-31 July 1944.
History. Headquarters Eighth Air Force, 1-30 August 1944.
History. Headquarters Eighth Air Force, 1-31 September 1944.
History. Headquarters Eighth Air Force, 1-31 October 1944.
History. Headquarters Eighth Air Force, 1-30 November 1944.
History. Headquarters Eighth Air Force, 1-31 December 1944.
History. Headquarters Eighth Air Force, 1-31 January 1945.
History. Headquarters Eighth Air Force, 1-28 February 1945.
History. Headquarters Eighth Air Force, 1 July – 30 August 1945.
History. Separation of Research and Development Command from the Air
Materiel Command.

Secondary Sources

Academic Papers

- Lonnquest, John. "The Face of Atlas: General Bernard Schriever the and Development of the Atlas Intercontinental Ballistic Missile 1953-1960." Ph.D. Diss., Duke University, 1996.
- Sigethy, Robert. "The Air Force Organization for Basic Research 1945-1970: A Study in Change." PhD Diss., The American University, 1980.
- Shaw, Eric J. "Controls on Developing Technology: The U.S. Commerical Air Transportation System During the Interwar Period, 1919-1939." Ph.D. Diss., Salve Regina University, 2000.

Articles

- Bradach, J. "Organizational Alignment: The 7-S Model." *Harvard Business School Note*, Reprint 9-497-045 (1996): 3-5.
- Bailey, Gavin. "The Narrow Margin of Criticality: The Question of the Supply of 100-octane Fuel in the Battle of Britain." *The English Historical Review*, 123, no. 510 (April 2008), Oxford University Press: 394-411. Retrieved from JSTOR.
- Davis, Richard G. "Take Down That Damned Sign!" *Airpower History*, 40 no. 4, Winter 1993.
- FitzGerald, Ben and Loren DeJonge Schulman. "12 Months in – 8 Months Left: An Update on Secretary Carter's Innovation Agenda." *Center for New American Security (CNAS)*, 28 April 2016. Retrieved from <http://www.cnas.org/an-update-on-carters-innovation-agenda#.VyT-h2NqfbM>.
- "Fifty Years of AFA." *Air Force Magazine*, 79 no. 2 (February 1996): 34-57.
- Heaton, Colin D. "Jimmy Doolittle: The Man Behind the Legend." *World War II*, 17, no. 7: 30, (May 2003): 46-53. Retrieved from EBSCOhost.
- Levinson, Sanford and Jack M. Balkin. "Constitutional Dictatorship: Its Dangers and Its Design." *Minnesota Law Review*, 94, (13 June 2010): 1789-1866. Retrieved from <http://ssrn.com/abstract=1508666>.
- Potts, Major General Ramsay D. "Reminiscences: Doolittle and the Mighty Eighth." *Airpower History*, 40 no. 4, Winter 1993.
- Purcell, Richard. "Hagel's 'Third Offset Strategy' Key to Maintaining U.S. Military Supremacy." *World Politics Review* (19446284) (December 29, 2014): 1.
- Tanber, George. "Surviving 'Doolittle Raiders' recount wartime bombing of Japan." *Reuters.com*, 19 April 2012, <http://www.reuters.com/article/2012/04/19/us-usa-doolittle-reunion-idUSBRE83I04J20120419>.

Schanche, Don "General of Outer Space." *Saturday Evening Post*. 234, no. 40 (October 7, 1961): 78-84. Retrieved from Academic Search Premier, EBSCOhost.

Wolk, Herman S. "Renaissance Man of Aviation." *Air Power History*, 40, no. 4 (Winter 1993), 7.

Books

Allison, Graham and Philip Zelikow. *Essence of Decision: Explaining the Cuban Missile Crisis*. New York: Longman, 1999.

Barlow, Jeffery G. *The Revolt of the Admirals: The Fight for Naval Aviation 1945-1950*. Washington, DC: Government Reprints Press, 2001.

Beaton, Kendall. *Enterprise in Oil: A History of Shell in the United States*. New York: Appleton-Century-Crofts, Inc., 1957.

Blumenson, Martin. *United States Army in World War II, The European Theater of Operations: Breakout and Pursuit*. Washington, DC: Government Printing Office, 1961.

Bodie, Warren M. *The Lockheed P-38 Lightning*. 4th printing ed. Hiawasse, GA: Motorbooks Intl, 1991.

Brafman, Ori, Judah Pollack, and Drew Birdseye. *The Chaos Imperative How Chance and Disruption Increase Innovation, Effectiveness, and Success*. New York: Penguin Books, 2011.

Brodie, Bernard. *Strategy in the Missile Age*. Santa Monica, CA: RAND Corporation, 2007.

Caldwell, Donald, and Richard Muller. *The Luftwaffe Over Germany: Defense of the Reich*. St Paul, MN: Greenhill Books, 2007.

Caraley, Demetrios. *The Politics of Military Unification: A Study of Conflict and the Policy Process*. New York: Columbia University Press, 1966.

Colosi, Thomas R. *On and Off the Record: Colosi on Negotiation*. New York: American Arbitration Association, 2001.

Copp, DeWitt S. *Forged in Fire: Strategy and Decisions in the Air War Over Europe, 1940-45*. Garden City, N.Y.: Doubleday, 1983.

Chandler, David G. *The Campaigns of Napoleon: The mind and Method of History's Greatest Soldier*. Vol 1. New York: Simon and Schuster, 1966.

Craven, Wesley Frank, and James Lea Cate, eds. *The Army Air Forces in World War II*. 7 vols. 1948-1958. New Imprint, Washington, DC: Office of Air Force History, 1983.

----- . *The Army Air Forces in World War II*. Vol 2, *Europe: Torch to Pointblank, August 1942 to December 1943*. 1949. New Imprint, Washington, DC: Office of Air Force History, 1983.

----- . *The Army Air Forces in World War II*. Vol 3, *Europe: Argument to VE Day*. 1949 New Imprint, Washington, DC: Office of Air Force History, 1983.

----- . *The Army Air Forces in World War II*. Vol 6, *Men and Planes*. 1955. New Imprint Washington, DC: Office of Air Force History, 1983.

- Crosby, Harry H. *A Wing and a Prayer: The "Bloody 100th" Bomb Group of the U.S. Eighth Air Force in Action over Europe in World War II*. New York: Harpercollins, 1994.
- Daso, Dik Allan *Doolittle: Aerospace Visionary*. Washington, DC: Brassey's, Inc., 2003.
- Davis, Richard G., *Carl A. Spaatz and the Air War in Europe*. Washington, DC: Center for Air Force History, 1996.
- Day, Dwayne A. *Lightning Rod: A History of the Air Force Chief Scientist's Office*. Washington, DC: U.S. Air Force Chief Scientists Office, 2000.
- Emme, Eugene M. *The Impact of Air Power: National Security and World Politics*. New York: D. Van Nostrand Company, 1959.
- Freeman, Roger A. *Mighty Eighth War Diary*. New York: Jane's, 1981.
- Futrell, Robert Frank. *Ideas, Concepts, Doctrine: A History of Basic Thinking in the United States Air Force 1907-1964*. Maxwell AFB, AL: Air University Press, 1974.
- Glines, Carroll, V., *Jimmy Doolittle, Master of the Calculated Risk*. New York: Van Nostrand Reinhold Co., 1980.
- Gorn, Michael H. *Harnessing the genie: science and technology forecasting for the Air Force, 1944-1986*. Washington, DC: Office of Air Force History, 1988
- , *Vulcan's Forge: The Making of an Air Force Command for Weapons Acquisition*. Andrews Air Force Base, MD: U.S. Air Force Systems Command Office of History, 1989.
- Gorn, Michael H. ed., *Prophecy Fulfilled "Toward New Horizons" and its Legacy*. Washington, DC: Air Force History and Museums Program, 1994.
- Gray, Colin, "Dowding and the British Strategy of Air Defense 1936-1940," in *Successful Strategies: Triumphant in War and Peace from Antiquity to the Present*, edited by Williamson Murray, and Richard Sinnreich, 241-279. New York: Cambridge University Press, 2014.
- Griffith, Thomas E. Jr. *MacArthur's Airman: General George C. Kenney and the War in the Southwest Pacific*. Lawrence, KS: Univ Pr of Kansas, 1998.
- Haass, Richard N. *The Bureaucratic Entrepreneur: How to be Effective in any Unruly Organization*. Washington, DC: Brookings Institution Press, 1999.
- Hinsley, F. H. with E. E. Thomas, C. A. G. Simkins, and C. F. G. Ransom, *British Intelligence in the Second World War: Its Influence on Strategy and Operations*, Vol 23, Part 2. New York: Cambridge University Press, 1988.
- Hoppes, Jonna Doolittle, *Calculated Risk: The Extraordinary Life of Jimmy Doolittle – Aviation Pioneer and World War II Hero*. Santa Monica: Santa Monica Press, 2005.
- Hughes, Thomas Alexander. *Admiral Bill Halsey: A Naval Life*. Cambridge, MA: Harvard University Press, 2016.
- , *Over Lord: General Pete Quesada and the Triumph of Tactical Air Power in World War II*. New York: The Free Press, 1995.

- Hughes, Thomas P. *Rescuing Prometheus: Four Monumental Projects That Changed the Modern World*. New York: Pantheon, 1998.
- Johnson, Stephen B., *The United States Air Force and the Culture of Innovation, 1945-1965*. Washington, DC: Air Force History and Museums Program, 2002.
- Kelsey, Benjamin S. *The Dragon's Teeth?: the Creation of United States Air Power For World War II*. Washington, DC: Smithsonian, 1982.
- Larrabee, Eric. *Commander in Chief: Franklin Delano Roosevelt, his Lieutenants, and Their War*. Annapolis: Naval Institute Press, 1987.
- MacDonald, Charles B. *United States Army in World War II, The European Theater of Operations: The Siegfried Line Campaign*. Washington, DC: Government Printing Office, 1963.
- McNaugher, Thomas L. *New Weapons Old Politics: America's Military Procurement Muddle*. Washington, DC: The Brookings Institution, 1989.
- Mann, Carl *Lighting in the Sky: the Story of Jimmy Doolittle*. New York: McBride, 1944.
- Meilinger, Phillip S. *Airmen and Air Theory: a Review of the Sources*. Maxwell Air Force Base, AL: Air University Press, 2001.
- , *Hoyt S. Vandenberg: The Life of a General*. Indianapolis: Indiana University Press, 1989.
- Mets, David R. *Master of Airpower: General Carl A. Spaatz*. Navato, CA: Presidio Press, 1997.
- Miller, Donald L., *Masters of the Air: America's Bomber Boys who Fought the Air War Against Nazi Germany*. New York: Simon and Schuster, 2006.
- Miller, Karen S. *The Voice of Business: Hill & Knowlton and Postwar Public Relations*. Chapel Hill, NC: The University of North Carolina Press, 1999.
- Miller, Kent D. *Fighter Units & Pilots of the 8th Air Force: September 1942-May 1945*. 2 vols. Atglen, PA: Schiffer Pub Ltd, 2001.
- Moran, Lord, *The Anatomy of Courage*. 2nd ed. London: Constable, 1966.
- Mrazek, Robert J. *To Kingdom Come: an Epic Saga of Survival in the Air War Over Germany*. New York: NAL Hardcover, 2011.
- Murray, Williamson. *Strategy for Defeat: The Luftwaffe 1933-1945*. Maxwell, AL: Air University Press, 1983.
- Neillands, Robin. *The Bomber War: the Allied Air Offensive Against Nazi Germany*. Woodstock: Penguin, 2001.
- Nelson, Craig, *The First Heroes: The Extraordinary Story of the Doolittle Raid – America's First World War II Victory*. New York: Penguin Group, 2002.
- Olsen, John Andreas. *A history of air warfare*. Washington, DC: Potomac Books, 2010.
- Perret, Geoffrey, *Winged Victory: The Army Air Forces in World War II*. New York: Random House, 1993.
- Porch, Douglas, *The Path to Victory: The Mediterranean Theater in World War II*. New York: Farrar, Straus and Giroux, 2004.
- Reynolds, Quentin James, *The Amazing Mr. Doolittle: a Biography of Lieutenant General James H. Doolittle*. New York: Appleton-Century-Crofts, 1953.

- Roland, Alex. *Model Research: The National Advisory Committee for Aeronautics*. Washington, DC: U.S. Government Printing Office, 1985.
- Rosen, Stephen Peter. *Winning the Next War: Innovation and the Modern Military*. Ithaca, NY: Cornell University Press, 1991.
- Rovere, Richard H. and Arthur Schlesinger Jr., *General MacArthur and President Truman: The Struggle for Control of American Foreign Policy*. New Brunswick, NJ: Farrar, Straus, and Giroux, 1951.
- Scott, James M. *Target Tokyo: Jimmy Doolittle and the Raid that Avenged Pearl Harbor*. New York: W. W. Norton & Company, 2015.
- Sheehan, Neil. *A Fiery Peace in a Cold War: Bernard Schriever and the Ultimate Weapon*. New York: Random House, 2009.
- Stiles, Bert. *Serenade to the Big Bird: a New Edition of the Classic B-17 Tribute*. Atglen, PA: Schiffer Publishing, 2007.
- Sturm, Thomas A. *The USAF Scientific Advisory Board: its First Twenty Years, 1944-1964*. Washington, DC: Office of Air Force History, 1986.
- Sweetman, Bill. *High Speed Flight*. London: Janes Publishing, 1984
- Thomas, Lowell and Edward Jablonski, *Doolittle: a Biography*. Garden City: Doubleday, 1976.
- Vorderman, Don. *The Great Air Races*. New York: Bantam Books, 1991.
- Wells, Mark K. *Courage and Air Warfare: the Allied Aircrew Experience in the Second World War*. Essex, England: Routledge, 1995.
- Winton, Harold R. *Corps Commanders of the Bulge: Six American Generals and Victory in the Ardennes*. Lawrence, KS: University Press of Kansas, 2007.
- Wolk, Herman S. *Planning and Organizing the Postwar Air Force 1943-1947*. Washington, DC: Office of Air Force History, 1984.
- , *Towards Independence: The Emergence of the U.S. Air Force, 1943-1947*. Washington, DC: Air Force History Support Office, 1996.
- Yarger, Harry R. *Strategy and the National Security Professional: Strategic Thinking and Strategic Formulation in the 21st Century*. Westport, CN: Praeger Security International, 2008.
- Zuckerman, Solly. *From Apes to Warlords*. New York: Harper and Row, 1978.